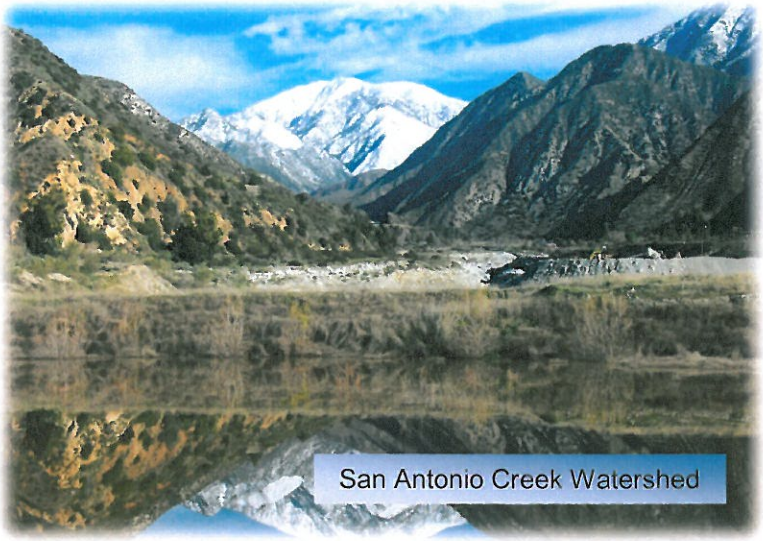
City of Upland

2010 Urban Water Management Plan

June 2011


San Antonio Creek Watershed


Upland Basin


Residential Land Uses

City of Upland

Urban Water Management Plan

June 2011

Prepared by the City of Upland With Assistance from:
Karen E. Johnson, Water Resources Planning

Contact Sheet

Report Contact Person:	Alison Loukeh Senior Management Analyst/Water Phone: 909.291.2935 e-mail: aloukeh@ci.upland.ca.us
Date of Public Hearing:	June 13, 2011
Plan Adoption Date:	June 13, 2011
Resolution Number:	6043
Plan Submitted to Department of Water Resources:	By July 13, 2011
The water supplier is a:	Municipality
Utility services provided by the water supplier include:	Water, wastewater collection
Is the agency a Bureau of Reclamation Contractor?	No
Is the agency a State Water Project Contractor?	No
Plan Assistance:	Karen E. Johnson, Water Resources Planning kejwater@aol.com

City of Upland

2010 Urban Water Management Plan Update

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Section 1 Plan Preparation

UWMP Act: *10620 (d) (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*
10621 (b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
10635 (b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.
10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier ... The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.
10644 (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.
10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

1.1 Background

The City of Upland (referred to hereafter as either City or Upland) is located approximately 35 miles east of Los Angeles in San Bernardino County at the base of the San Gabriel Mountains. The population in the City is almost 75,000 with the projected population anticipated to reach over 82,000 by 2035. The City is approximately 95 percent built out. Water demands are currently approximately 22,600 acre-feet per year (afy) with a projected demand (before conservation) of over 24,000 acre-feet by 2030.

The City is blessed with a diverse portfolio of water supplies including groundwater from three groundwater basins, local surface water from San Antonio Creek, and imported water from Metropolitan Water District of Southern California (MWD) conveyed through Inland Empire Utilities Agency (IEUA). These supplies are available directly to the City or through the City's ownership in two small water companies. Recycled water will become a City water supply within the next couple of years.

This 2010 Urban Water Management Plan (UWMP) Update, prepared by the City, outlines a balanced approach to the management of water supplies. It describes and evaluates demand projections, sources of water supply, supply reliability, water use efficiency, and demand management measures. The City's 2010 UWMP Update has been prepared consistent with the State of California Water Code Sections 10610 through 10656, known as the Urban Water Management Planning Act (Act). Originally enacted in 1983, the Act requires that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 afy prepare and adopt an UWMP. The Act requires suppliers to describe and evaluate sources of water supply, efficient use of water, demand management

measures, implementation strategies and schedules, and other relevant information and programs. Sections of this UWMP that correspond to the Act are summarized at the beginning of each chapter. These plans must be filed with the California Department of Water Resources (DWR) every five years. The deadline for adoption of the 2010 plan by the City Council is July 1, 2011, after which the City has 30 days to submit the UWMP to DWR.

Many amendments have been added to the Act since UWMPs were last required in 2005. The most significant change is SB7X 7 which requires urban suppliers to reduce the statewide average per capita daily water consumption by 20 percent by December 31, 2020. A summary of recent significant changes is provided.

AB 1376

This bill requires water suppliers to provide at least 60 days notification of UWMP preparation to any city or county within which the supplier provides water and of the public hearing.

AB 1420

This bill requires urban water suppliers to implement water Demand Management Measures (DMMs) described in water code section 10631(f) to be eligible for any water management grants or loans awarded or administered by the DWR, State Water Resources Control Board (SWRCB), or California Bay-Delta Authority (CBDA) or its successor agency (collectively referred to as "Funding Agencies"). The DMMs correspond to the 14 Best Management Practices (BMPs) listed and described in the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU). Determination of DMM compliance is based on an individual water agencies implementation or participation with a regional group. This bill is in effect until July 1, 2016 unless another statute is enacted.

AB 1465

This bill deems water suppliers who are members of CUWCC and comply with the MOU, dated December 10 2008, to be in compliance with the requirement to describe the supplier's water DMMs in its UWMP.

SB 407

This bill requires multi-family and commercial properties to replace non-compliant plumbing fixtures with water conserving fixtures during building improvements or alteration. All single family homes must have non-compliant plumbing fixtures replaced by 2017 and all multi-family and commercial buildings by 2019.

SB 1087

This bill requires UWMPs to include projected water use for single family and multi-family housing planned for lower income households. This bill supports the requirements that suppliers grant a priority for the provision of service to housing units affordable to lower income households.

SBx7-7

This bill requires all water suppliers to increase water use efficiency. The goal is to achieve a 20 percent reduction in statewide urban per capita water use by December 31, 2020. This bill also establishes an incremental goal of reducing per capita water use by 10 percent by December 31, 2015.

The DWR has provided detailed background information to guide water purveyors in developing 2010 UWMPs. Appendix A includes a copy of DWR's most recent checklist for preparing an UWMP in compliance with the Water Code. In preparing the UWMP, staff utilized the DWR *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (March 2011), DWR guidelines on methodologies for calculating baseline and compliance urban per capita water use, and other references listed in Section 7 of this report.

1.2 Coordination

City staff prepared the UWMP in coordination with IEUA and other agencies listed in Table 1. Copies of the letters notifying the agencies listed in Table 1, along with public notices of the hearing encouraging the involvement of various community groups, letters of correspondence, and the to be adopted resolution are included in Appendix B. Active involvement in plan preparation by various elements of the population was encouraged.

The City is a member of IEUA. IEUA is a member agency of MWD, the regional wholesaler of imported water. The City coordinated the development of this UWMP with IEUA. In accordance with the Act, the City provides its imported water needs to IEUA. IEUA has taken the position of preparing a regional approach to establishing baseline and setting targets based on regional demands and in support of its eight retail member agencies that must comply. All member agencies within IEUA's service area have agreed to the formation of a regional alliance, and will continue to cooperatively participate in developing programs and meeting water conservation goals.

As required by *California Water Code* Section 10631(k), IEUA provided its member agencies information that quantified water availability to meet their projected demands for the next 25 years, in five-year increments. Based on the projections of retail demand and local supply development provided by IEUA's member agencies and the imported supply availability described in MWD's 2010 Regional UWMP (RUWMP), IEUA provided data to be used by its member agencies to update their UWMPs.

Table 1 Coordination with Appropriate Agencies							
Coordinating Agencies	Participated in Plan Development	Contacted for Assistance	Sent Copy of Draft Plan	Commented on Draft	Attended Public Meetings	Sent Notice of Intention to Adopt	Not Involved/ No Information
Chino Basin Watermaster			X			X	
City of Chino			X			X	
City of Chino Hills			X			X	
City of Ontario			X			X	
City of Pomona			X			X	
County of San Bernardino			X	X		X	
Cucamonga Valley Water District			X			X	
Fontana Water Company			X			X	
Golden State Water Company			X			X	
Inland Empire Utilities Agency	X	X	X	X		X	
Jurupa Community Services District			X			X	
Monte Vista Water District			X			X	
San Antonio Water Company	X	X	X			X	
Six Basins Watermaster			X			X	
Three Valley Municipal Water District			X			X	
Water Facilities Authority			X			X	

1.3 Plan Adoption, Submittal, and Implementation

The UWMP is planned to be adopted by the City Council June 13, 2011 following a public hearing at the same meeting. This UWMP will subsequently be submitted to DWR within 30 days of the adoption date; see Appendix B for the adoption resolution. A copy of the UWMP will also be submitted to the California State Library and the entities receiving water within the service area and others as listed in Table 1, within 30 days of the submission of the UWMP to DWR. The draft plan was made available for public review before the public hearing on June 13, 2011; the adopted plan was made available for public review during normal business hours for at least 30 days following adoption.

This UWMP update demonstrates that the City's water supplies are sufficient to meet projected usage for normal year, dry year, and multiple dry year scenarios extending to the year 2035. The UWMP also demonstrates that potable water savings requirements under SBx7-7 can be satisfied with conservation measures and implementation of recycled water as a supply source.

Section 2 System Description

UWMP Act: *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following: 10631. (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

2.1 Service Area Physical Description

The City is located approximately 35 miles east of Los Angeles and lies directly south of the San Gabriel mountain range. As shown on Figure 1, the western boundary of the City generally coincides with the boundary between San Bernardino and Los Angeles Counties. The northern boundary lies to the south of the San Antonio Heights residential community and the San Gabriel Mountains. The San Bernardino Freeway (Interstate 10) marks the southern boundary, and the Cucamonga Flood Channel generally coincides with the eastern boundary. The City has common boundaries with the incorporated cities of Claremont to the west, Montclair to the southwest, Ontario to the south, and Rancho Cucamonga to the east. Land uses consist of predominantly residential neighborhoods with smaller portions of commercial and industrial developments.

The City obtains its potable water from Cucamonga, Six, and Chino groundwater basins through its own wells, San Antonio Water Company (SAWCo) wells, and West End Consolidated Water Company (WECWCo) wells. WECWCo wholesales water only; it has no retail customers. San Antonio Creek water is obtained from SAWCo and treated at the City owned San Antonio Canyon (SAC) Surface Water Treatment Plant (WTP). Imported surface supplies are purchased from MWD through IEUA and treated by the Water Facilities Authority (WFA) at Aqua de Lejos WTP. The WFA is a private water company that purchases and treats imported MWD water for Upland, Ontario, Chino, Chino Hills, and the Monte Vista Water District from IEUA. The City is a member of WFA.

Although not currently a supply source, recycled water will be obtained from IEUA and served by the City in late 2011. Stormwater is conveyed to recharge facilities when available. To increase groundwater recharge capability, groundwater quality, and stormwater flood protection, the City expanded the Upland Recharge Basin in 2008. This is a spreading facility located in the upper northwest region of the Chino Basin. The City increased the storage capacity from 292 to 1,250 acre-feet. All of these efforts were designed to improve local water supply resources, enhance groundwater quality and recharge, improve operational flexibility and optimize the use of local water resources consistent with the Chino Basin Optimum Basin Management Plan (CBOBMP).

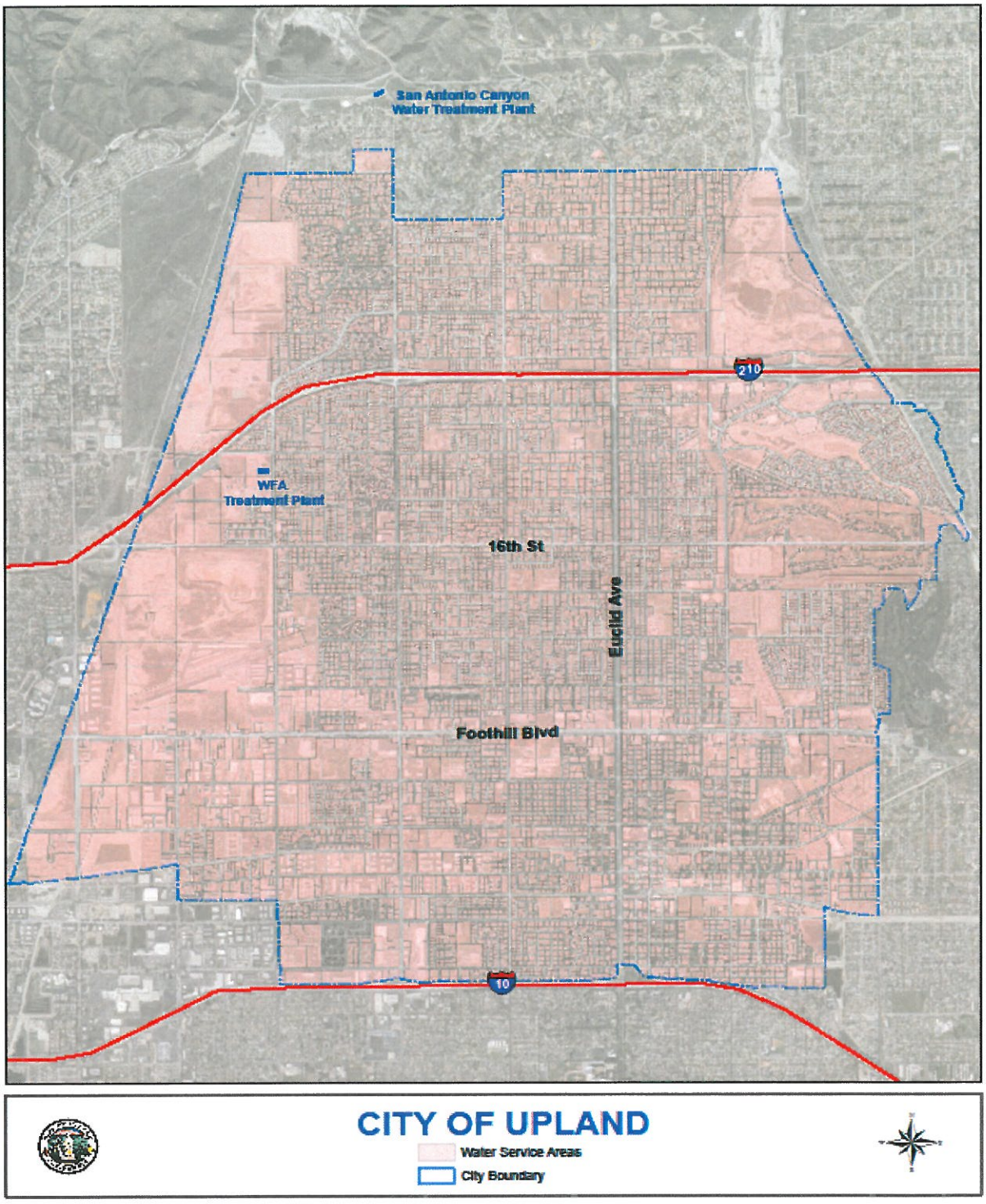

Figure 1 Service Area Boundary

2.2 Climate

Climate plays an important role in the demand for water within the City's service area. Temperature, rainfall, and wind are typical of the Mediterranean climate characterized by mild winters, warm summers, moderate rainfall, and general year round sun. According to the National Oceanic and Atmospheric Administration Western Regional Climate Center website and the California Irrigation Management Information System, the City receives average annual precipitation of 16.07 inches with average temperatures ranging from 52° Fahrenheit in the winter months to 79° Fahrenheit in the summer months. Records indicate that temperatures as high as 117 degrees have been recorded in the City. Average evapotranspiration rates (ETo) have averaged about 47.5 inches. ETo is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much water crops, lawns, gardens, and trees require for healthy growth and productivity.

The City experiences seasonal winds usually during the fall and winter months referred to as Santa Ana winds. Santa Ana winds are hot, dry northeasterly winds which often attain velocities in excess of 40 mph. Santa Ana winds are particularly damaging because they frequently occur during the driest season of the year, increasing customer water demands and increasing the risk of rapidly spreading fires, thus increasing fire fighting water demands.

2.3 Service Area Population

The City of Upland General Plan guides development of lands within the water service area. Consistent with the General Plan, population projections were obtained from the Southern California Association of Governments (SCAG). SCAG population projections and General Plan land uses were utilized in the City's recent Water System Master Plan Update in projecting water demands. The City is currently at 95 percent build-out, and it is anticipated that most of the final five percent of development on undeveloped lands will occur over the next twenty years with minor increases thereafter. Table 2 presents the approximate current and the projected population of the City. The 2010 population was recently updated by SCAG based on census data and reflects a decline in population over previous years. The projections for 2020 and 2035 were recently updated by SCAG with a slight decline over previous projections.

Table 2

Population — Current and Projected

	2010	2015	2020	2025	2030	2035	Data Source
Service Area Population[1]	73,732	76,110	78,500	79,680	80,870	82,050	Southern California Association of Governments (SCAG)

[1] 2010, 2020, and 2035 data provided by SCAG from its website, accessed March 2011. Years 2015, 2025, 2030 data were interpolated proportionately between the provided data for years 2010, 2020, and 2035.

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Section 3 System Demands

UWMP Act: *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.
10631 (e) (2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.
10631.1 (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.
(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.
10608.20 (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis. (2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020...
10608.20 (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).
10608.26 (a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following; (1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part. (2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part. (3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

3.1 Baselines and Targets

This section describes the base period ranges used to establish the baseline per capita water demands. Water use targets in conformance with SBx7-7 are described for 2020 and the interim target of 2015.

3.1.1 Establishing Baseline

Table 3 presents the base period ranges for the City's 10 year (1996 through 2005) and five year (2005 through 2009) periods. These baseline periods were selected, using DWR Guidebook criteria, because they represent the highest per capita consumption rates upon which to base SBx7-7 Targets (discussed later). Table 4 lists the City population served, water supplied, and per capita consumption for each of the years within the 10 year range. The baseline daily per capita consumption for the 10 year period was 273 gpcd.

Table 3 (DWR Table 13)

Base Period Ranges			
Base	**Parameter**	**Value**	**Units**
10 Year Base Period	2008 total water deliveries	22,289	afy
	2008 total volume of delivered recycled water	0	
	2008 recycled water as a percent of total deliveries	0	percent
	Number of years in base period	10	years
	Year beginning base period range	1996	
	Year ending base period range	2005	
5 Year Base Period	Number of years in base period	5	years
	Year beginning base period range	2005	
	Year ending base period range	2009	

Table 4 (DWR Table 14)

Base Daily Per Capita Water Use — 10 Year Range

Base Period Year		Distribution System Population [1]	Daily System Gross Water Use (afy)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Year			
1	1996	66,385	20,906	281
2	1997	66,887	21,059	281
3	1998	67,389	19,044	252
4	1999	67,891	22,030	290
5	2000	68,393	22,824	298
6	2001	69,744	21,488	275
7	2002	71,094	21,968	276
8	2003	72,445	20,794	256
9	2004	73,217	21,474	262
10	2005	73,989	21,331	257
			Base Daily Per Capita Water Use	273

[1] Southern California Association of Governments

Table 5 lists the population served, water supplied, and per capita consumption for years within a five year range. The five year baseline is needed to determine whether the 2020 target meets the legislation's minimum water use reduction requirements of at least a five percent reduction per capita for this five year period. This is discussed in the next subsection under Establishing Targets.

Table 5 (DWR Table 15)				
Base Daily Per Capita Water Use — 5 Year Range				
Base Period Year		Distribution System Population[1]	Daily System Gross Water Use (afy)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Year			
1	2005	73,989	21,331	257
2	2006	74,381	21,932	263
3	2007	74,774	23,832	285
4	2008	75,166	22,289	265
5	2009	74,449	22,073	265
Base Daily Per Capita Water Use				267

[1]Southern California Association of Governments

3.1.2 Establishing Targets

DWR provided four different methods to establish water conservation targets. The City has discretion on which target method it wishes to utilize.

- **Method 1 – Baseline Reduction Method.** The 2020 water conservation target of this method is defined as a 20 percent reduction of average per capita demand during the ten year baseline period described above. This equates to a 2020 target of 218 gpcd for the City, or 80 percent of 273 gpcd.

- **Method 2 – Efficiency Standard Method.** This target is based on calculating efficiency standards for indoor use separately from outdoor use for residential sectors and an overall reduction of 10 percent for commercial, industrial, and institutional (CII) sectors. The aggregated total of the efficiency standards in each area is then used to create a conservation target. For Upland, this is not the preferred method to use because of the exorbitant cost involved in collecting detailed landscape data by parcel.

- **Method 3 – Hydrologic Region Method.** This method uses the ten regional urban water use targets for the State. A static water use conservation target for both 2015 and 2020 is assigned for Region 4: South Coast. The South Coast region target is 149 gpcd, reflecting a 20 percent reduction. The Method 3 target is based on the City reaching 95 percent of the South Coast region target, or 142 gpcd. This method was not chosen because the base year consumption rate for the region (186 gpcd) is not reflective of Upland's local land use and other unique characteristics, as well as historical water usage. Applying this method would result in a reduction target of over 45 percent for Upland, an overly aggressive and cost prohibitive goal to achieve.

- **Method 4 – BMP Based Method.** This method uses previous water supplier BMPs to establish a conservation target for 2020. Depending on how aggressively the water supplier has pursued water reduction and conservation in the past, a new conservation target for 2020 is assigned. Analyses of this method indicated that the target result for the City is very similar to the Method 1 target.

Individual City SBx7-7 Target - Based upon the description above, method 1 was selected as the most practical methodology for the City to establish water use reduction targets to meet the requirements set forth in the Water Conservation Act of 2009 (SBx7-7). Using Method 1, the 2015 interim water use target is 246 gpcd and the final 2020 water use target is 218 gpcd.

DWR requires a comparison between the resulting target and 95 percent of the five-year baseline. The baseline daily per capita consumption for the five year period was 267 gpcd. The five-year baseline reduced by five percent is 254 gpcd. This reduced five-year baseline is compared to the 2020 target of 218 to ensure that the 2020 target is lower than 95 percent of the five-year baseline. Since the City target of 218 gpcd is lower than 254 gpcd, the target of 218 gpcd is appropriate to use.

Regional Alliance - The City is participating in a regional alliance with IEUA. IEUA formed a regional alliance for its eight member agencies, of which the City is a member. Under the regional alliance, the entire region is able to benefit from local and regional investments such as the groundwater replenishment with recycled water, direct recycled water use, and water use efficiency programs that IEUA and its member agencies are implementing. IEUA will provide annual monitoring and reporting for its region on progress toward compliance with the regional target. If the regional alliance meets its water use target, all agencies in that alliance are deemed compliant regardless of individual performance. If IEUA's regional alliance fails to meet its target, each individual supplier, including the City, will have to meet their individual targets.

3.2 Historical Water Demands

The City has several billing classifications: single family residential, multi-family residential, commercial and institutional (which includes industrial), and landscape irrigation. There are no agricultural accounts. As required by the Act, Table 6 presents 2005 deliveries by water use sector. Unmetered water use is not included in this table or the following delivery tables because it is accounted for separately and documented in subsequent tables, per the DWR UWMP Guidebook.

Table 6 (DWR Table 3)					
Water Deliveries — Actual, 2005					
	2005 (acre-feet)				
	Metered		Not metered		Total
Water Use Sector	No. of Accounts	Volume	No. of Accounts	Volume	Volume
Single Family Residential	15,086	11,765	0	0	11,765
Multi-family Residential	2,117	3,688	0	0	3,688
Commercial (inc. Industrial, Institutional)	1,361	3,025	0	0	3,025
Industrial (included with Commercial)	0	0	0	0	0
Institutional (included with Commercial)	0	0	0	0	0
Landscape	335	1,489	0	0	1,489
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	18,899	19,967	0	0	19,967

Table 7 presents 2010 deliveries by water use sector (as required by the Act) and includes a breakdown by percentage of each sector. Approximately 75 percent of the demands are associated with residential uses. This distribution of demands in 2010 was applied to projected demands starting in 2015 to disaggregate the demands by water use sector.

Table 7 (DWR Table 4)						
Water Deliveries — Actual, 2010						
	2010 (acre-feet)					
	Metered			Not Metered		Total
Water Use Sector	# of Accounts	Volume	Percent of Total	# of Accounts	Volume	Volume
Single Family Residential	14,675	11,296	58	0	0	11,296
Multi-family Residential	1,985	3,418	17	0	0	3,418
Commercial (inc. Industrial, Institutional)	1,338	2,807	14	0	0	2,807
Industrial (inc. with Commercial)	0	0	0	0	0	0
Institutional (inc. with Commercial)	0	0	0	0	0	0
Landscape	407	2,085	11	0	0	2,085
Agriculture	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	18,405	20,118	100	0	0	20,118

3.3 Water Demand Projections

Demand projections are identified here by water use sector, for planned low income housing, and for other water uses and losses.

3.3.1 Projections by Water Use Sector

Tables 8 through 10 present water demand projections based on an increase in population projected by SCAG through 2035 for the City as presented in Table 2 and described in Section 2. SCAG relies on Department of Finance data, City and County General Plan input, and other data sources for its estimates and projections. A projected increase of 8,320 residents is anticipated between 2010 and 2035.

Water demand projections presented in the tables below were calculated by applying the target per capita factors to SCAG projected population. These projections were also validated by comparing the estimates in the Upland Water Master Plan Update. The number of accounts, presented in Tables 8 through 10, was projected to increase proportionally based on the percent increase in population during each five year increment.

Table 8 (DWR Table 5)

Water Deliveries — Projected, 2015

	2015 (acre-feet)[1]				
	Metered		Not metered		Total
Water Use Sector	No. of Accounts	Volume	No. of Accounts	Volume	Volume
Single Family Residential	15,418	12,063	0	0	12,063
Multi-family Residential	2,086	3,650	0	0	3,650
Commercial (inc. Industrial, Institutional)	1,406	2,997	0	0	2,997
Industrial (included with Commercial)	0	0	0	0	0
Institutional (included with Commercial)	0	0	0	0	0
Landscape	428	2,226	0	0	2,226
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	19,337	20,936	0	0	20,936

[1]These demand projections reflect 10 percent conservation savings (resulting in a target demand rate of 246 gpcd).

Table 9 (DWR Table 6)					
Water Deliveries — Projected, 2020[1]					
	2020 (acre-feet)				
	Metered		Not metered		Total
Water Use Sector	No. of Accounts	Volume	No. of Accounts	Volume	Volume
Single Family Residential	15,665	11,058	0	0	11,058
Multi-family Residential	2,119	3,346	0	0	3,346
Commercial (inc. Industrial, Institutional)	1,428	2,748	0	0	2,748
Industrial (included with Commercial)	0	0	0	0	0
Institutional (included with Commercial)	0	0	0	0	0
Landscape	434	2,041	0	0	2,041
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
Total	19,646	19,192	0	0	19,192

[1]Projections reflect a 20 percent conservation savings resulting in a target demand rate of 218 gpcd.

Table 10 (DWR Table 7)						
Water Deliveries — Projected, 2025, 2030, 2035 (acre-feet)[1]						
	2025		2030		2035	
	Metered		Metered		Metered	
Water Use Sector	No. of Accounts	Volume	No. of Accounts	Volume	No. of Accounts	Volume
Single Family Residential	15,903	11,225	16,133	11,392	16,352	11,559
Multi-family Residential	2,151	3,396	2,182	3,447	2,212	3,497
Commercial (inc. Industrial, Institutional)	1,450	2,789	1,471	2,831	1,491	2,872
Industrial (included with Commercial)	0	0	0	0	0	0
Institutional (included with Commercial)	0	0	0	0	0	0
Landscape	441	2,071	447	2,102	454	2,133
Agriculture	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	19,945	19,482	20,233	19,772	20,509	20,062

[1]These projections reflect a 20 percent conservation savings resulting in a target demand rate of 218 gpcd.

3.3.2 Lower Income Housing Demand Projections

SB 1087 requires water providers to grant priority service hook-ups to lower income housing developments during times of supply shortage. The UWMP Act requires documentation of future water demands associated with planned new lower income housing by the local land use planning jurisdiction.

The City's updated Housing Element of the General Plan indicates the need for new construction of 804 extremely low to low income units within the City by 2014. Water demands for planned low income housing by 2015 were based on the target reductions in existing per capita demands for 2015 and 2020. New demands associated with planned low income housing are 710 acre-feet in 2015 reduced to 631 by 2020 to reflect conservation efforts, as presented in Table 11. The Housing Element indication of need did not distinguish between single family and multiple family housing units.

Table 11 (DWR Table 8)

Lower Income Housing - Projected Water Demands (afy)

Water Use Sector	2015	2020	2025	2030	2035
Single Family Residential	710	631	631	631	631
Multi-family Residential	0	0	0	0	0
Total	710	631	631	631	631

[1] Demands based on housing units identified in City General Plan Housing Element, 2009. No distinction between single family or multi-family units.

3.3.3 Sales to Other Agencies (External Demand)

The City does not have any contracts, jurisdictional or contractual obligations, or long term agreements to wholesale water to any other water purveyor. Therefore, there are no past, current, and projected water sales identified in Table 12. The City does, however, transfer and exchange water with other agencies for the purpose of supporting regional water supply sustainability. Transfers and exchanges are described later in this report.

Table 12 (DWR Table 9)

Sales to Other Water Agencies (afy)

Agency	2005	2010	2015	2020	2025	2030	2035
No Long Term Sales Commitments	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

3.3.4 Other Water Uses and Losses

Other water uses include unbilled usage or system losses, as presented in Table 13. The difference between water production and billed consumption is approximately 6 percent based on the City's historical data. This estimate reflects unbilled water usage which includes system losses, meter reading errors, etc, as the City accounts for all water use. The percent is an average of previous years; however 2010 estimates were lower at 2.55 percent; system losses fluctuate annually depending on system conditions, climatic conditions, and consumption patterns. The estimate for 2010 is much lower than the Upland average which fits within the typical range of five to 10 percent for Southern California. Since the 2010 demands on the system are actual, the lower estimate was included for 2010 and the average of six percent was used for projections.

Table 13 (DWR Table 10)							
Additional Water Uses and Losses (afy)							
Water use	2005	2010	2015	2020	2025	2030	2035
Saline Barriers	0	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0	0
Recycled Water[1]	0	0	486	486	486	486	486
System Losses[2]	1,358	513	1,256	1,152	1,169	1,186	1,204
Other (define)	0	0	0	0	0	0	0
Total	1,358	513	1,742	1,638	1,655	1,672	1,690

[1]UHCC recycled water irrigation demands will not offset City potable demands. Currently SAWCo serves irrigation water; this will be replaced with City recycled water.
[2]Since the City accounts for all usage, system losses are considered unbilled water use, the difference between production and billed consumption: actual 6.8% for 2005 and 2.55% for 2010; 6% average for projections.

Recycled water for the Upland Hills Country Club (UHCC) golf course is included in Table 13 because these irrigation demands are not currently met from City supplies. SAWCO currently serves UHCC. The irrigation demands will be met with City recycled water once the distribution system is constructed, anticipated towards the end of 2011. Other planned recycled water demands will offset City potable supplies and therefore are accounted for in Tables 8 through 10.

3.3.5 Total Water Demands

Total water use for the City is comprised of water deliveries, new recycled water demands, and unmetered uses and losses. Total water use is presented in Table 14.

Table 14 (DWR Table 11)							
Total Water Use and Demand Projections (afy)[1]							
Water Use	2005	2010	2015	2020	2025	2030	2035
Total Water Deliveries (Tables 6 to 10)	19,967	19,605	20,936	19,192	19,482	19,772	20,062
Sales to Other Water Agencies (Table 12)	0	0	0	0	0	0	0
Additional Water Uses and Losses (Table 13)	1,358	513	1,256	1,152	1,169	1,186	1,204
Total	21,324	20,118	22,678	20,830	21,137	21,444	21,752

[1]Deliveries and system losses projected for 2015 through 2035 reflect conservation targets.

Table 15 presents total demand projections provided by the City to IEUA. Water demand projections were updated for this 2010 UWMP with new demands reflecting SCAG projections, and confirmed with the water master plan projections based on General Plan land uses. Conservation targets are incorporated in these updated projections.

Table 15 (DWR Table 12)							
Upland Demand Projections Provided to IEUA (afy)							
Wholesaler	Contracted Volume	2010	2015	2020	2025	2030	2035
IEUA/MWD[1]	[2]	20,118	22,678	20,830	21,137	21,444	21,752

[1] Projections provided to IEUA 2011.
[2] IEUA's contracted volume with MWD is for the total of all of its member agencies.

3.4 Water Use Reduction Implementation Plan

Retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements (SBx7-7). The City will meet the SBx7-7 2015 target of 246 gpcd and 2020 target of 218 gpcd (total of 55 gpcd to be reduced) through the following activities.

1. Passive and active conservation activities
2. Use of recycled water
3. Water conservation ordinance (Ordinance No. 1786, chapter 13.16) permanent restrictions

Passive and Active Conservation Activities. Conservation activities include demand management measures that the City will continue to implement (see Section 6).

Use of Recycled Water. Recycled water will be used both directly and through the indirect use by replenishing groundwater with recycled water (see Section 4). Total City recycled water utilization by 2020 is 72 gpcd, more than the 55 gpcd reduction needed to meet the 2020 target of 218 gpcd. These actions will allow the City to exceed the SBx7-7 targets.

Water Conservation Ordinance Permanent Restrictions. Permanent mandatory water use efficiency measures identified in City Ordinance 1786 (adopted in 2005) include the following, all of which are already contributing to reduced water consumption in the City. All measures directly prohibit wasting of water.

- The washing of sidewalks, walkways, driveways, public and private parking areas and all other impervious hard surfaced areas by direct hosing when runoff water directly flows to a gutter or storm drain, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety.
- Excessive or unreasonable runoff of water or unreasonable spray of the areas being watered. Every customer is deemed to have his or her water system under control at all times, to know the manner and extent of this water use and any runoff, and to employ available alternatives to apply irrigation water in a reasonably efficient manner.
- Allowing, permitting, or causing the escape of water through breaks or leaks within the customer's plumbing or private water distribution system for any substantial period of time within which such break or leak should reasonably have been discovered and corrected. It shall

be presumed that a period of 72 hours after the customer discovers such a break or leak or receives notice from the city of a break or leak, is a reasonable time within which to correct such break or leak, or, at a minimum, to stop the flow of water from such break or leak.

- Outdoor irrigation of landscape by sprinklers during the hours of 10:00 a.m. to 6:00 p.m. Citizens are encouraged to avoid the use of sprinklers on windy days. Irrigation by handheld hose, drip irrigation, hand-held bucket, or similar container or by use of a cleaning machine equipped to recycle any water used are permitted anytime. In no event shall any water so used be permitted to run off into adjacent property, streets, alleys or storm drains.
- Washing of automobiles, trucks, trailers, boats, airplanes, and other types of equipment (mobile or otherwise) unless done with a hand-held bucket or hand-held hose equipped with a positive shutoff nozzle for quick rinses. The nozzle shall be removed when the hose is not in use to ensure the water supply is shutoff. However, this section does not apply to the washing of the above-listed vehicles or mobile equipment when conducted on the immediate premises of a commercial carwash.
- All eating and drinking establishments of any kind including, but not limited to, any restaurant, hotel, cafe, cafeteria, bar or club, whether public or private, shall not provide drinking water to any person unless it is expressly requested.

This implementation plan, consisting of the three items listed previously in this section, was reviewed at the UWMP public hearing in June 2011. Community input was solicited. No economic impacts are anticipated to result from the water use reduction program.

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Section 4 System Supplies

UWMP Act: *10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a) [to 20 years or as far as data is available]. If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*
10631 (b) (1) A copy of any groundwater management plan adopted by the urban water supplier...
10631 (b) (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or board has adjudicated the rights to pump groundwater...For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted...
10631 (b) (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic records.
10631 (b) (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonable available, including, but not limited to, historic use records.
(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
10631 (i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long term supply.
10631 (k). Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same 5 year increments, and during various water year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan information requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:
10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.
10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse determination with regard to the technical and economic feasibility of serving those uses, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
10633 (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.
10633 (e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

10633 (f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems and to promote recirculating uses.
(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

4.1 Overview of City Supplies

The City's current water supply portfolio consists of several sources.

- Groundwater pumped from City owned wells
- Groundwater purchased from SAWCo and WECWCo
- Surface water purchased from SAWCo
- Imported water from MWD purchased through IEUA for treatment in WFA

Table 16 presents supplies available to the City under its current and projected supply portfolio. Most of these supplies reflect gross water entitlements that could enter the City's distribution system as production quantities. The indirect potable reuse of groundwater replenishment using recycled water is accounted for later in this report. These current and future water supplies available to the City are described in this report section. The City's entitlement to SAWCo water increases between 2010 and 2015 due to the transfer of UHCC's SAWCo shares to the City. The SAWCo surface water supply for 2010 is based on the previous five year usage averaged; 2015 includes the 2.6 percent increase in shares.

Table 16							
Water Supplies — Current and Projected (afy) [1]							
Water Supply Sources		2010	2015	2020	2025	2030	2035
Water Purchased From:	Wholesaler Supplied Volume (yes/no)						
WFA/IEUA/MWD[2]	No	5,678	5,678	5,678	5,678	5,678	5,678
SAWCo Surface Water[3]	No	2,324	2,385	2,385	2,385	2,385	2,385
SAWCo Groundwater[3]	No	6,857	7,119	7,119	7,119	7,119	7,119
WECWCo Groundwater	Yes	4,468	4,468	4,468	4,468	4,468	4,468
Additional Upland Groundwater Entitlement		6,081	6, 081	6, 081	6, 081	6, 081	6, 081
Transfers In		0	0	0	0	0	0
Exchanges In		0	0	0	0	0	0
Recycled Water – Direct Use		0	900	1,300	1,300	1,300	1,300
Desalinated Water		0	0	0	0	0	0
Other		0	0	0	0	0	0
Total		25,408	26,630	27,030	27,030	27,030	27,030

[1]Supplies reflect entitlements under average year conditions.
[2]WFA based on 10-year rolling average through 2009.
[3]SAWCo surface and groundwater supplies increased in 2015 to reflect increased City shares. Surface water based on previous five year yield from San Antonio Creek for City for 2010.

The City has developed a diverse portfolio of water supply sources. During the past 10 years through 2010, the City produced an average of 20,000 afy of groundwater, local surface water, and imported water supplies. This annual average water production reflects 66 percent groundwater, 25 percent imported water, and 9 percent local surface water. As presented in Table 16, the City has rights or entitlements to almost 27,000 afy of water supplies under 2015 average water year conditions; however, the imported water entitlement is based on a ten year rolling average utilization and the local surface supply is based on availability. During the ten year period ending in 2010, the City used approximately 79 percent of its total entitlements, on average.

As presented in Table 17, the City purchases water from several sources. The City currently has rights to 68 percent of the stock in SAWCo which will increase to 70.6 percent by 2015; and 91 percent of WECWCo stock. Rights to stock ownership in these private water companies entitle the City to 68/70.6 and 91 percent of the water produced by SAWCo and WECWCo, respectively. SAWCo produces surface water which the City treats at its SAC WTP. Both SAWCo and WECWCo produce groundwater.

Table 17						
Wholesale Supplies — Existing and Planned Sources of Water (afy)						
Wholesale Sources	Contracted Volume	2015	2020	2025	2030	2035
Purchased Surface Water from SAWCo	[1]	2,385	2,385	2,385	2,385	2,385
Purchased Groundwater from SAWCo	[2]	7,119	7,119	7,119	7,119	7,119
Purchased Groundwater WECWCo	[2]	4,468	4,468	4,468	4,468	4,468
Imported Treated Water from WFA	[3]	5,678	5,678	5,678	5,678	5,678
Recycled Water from IEUA		900	1,300	1,300	1,300	1,300

[1]Surface water availability dependent on climatic conditions. Average utilization (2006-10) provided here.
[2]Groundwater supplies based on entitlements.
[3]Imported water entitlement based on 10 year rolling average City utilization of supply through 2009.

All water supply sources, including purchases, are described together in this section of the UWMP. Purchases are included with City supplies for several reasons. The City has a majority stock ownership in SAWCo and WECWCo. The City operates the supply system in a manner such that the City can pump SAWCo and WECWCo supplies from both City wells and company wells. In addition, the SAWCo and City systems are interconnected.

4.2 Groundwater Resources

The City's groundwater supplies come from wells located in three adjudicated basins: Chino Basin, Six Basins (specifically the Upper Claremont Heights and San Antonio Canyon subbasins), and Cucamonga Basin. The City has groundwater rights in Chino Basin and Six Basins with nine wells. The City purchases groundwater from these two basins as well as from Cucamonga Basin from SAWCo and WECWCo.

Copies of the judgments for Chino Basin and Six Basins are provided in Appendices C and E; Cucamonga decree is in Appendix D. These judgments and decree indicate the basins were historically in overdraft at various times; however, recent operational data indicate that the basins have been managed within the safe yield. DWR Bulletin 118 (2003), the most recent DWR documentation of statewide basin overdraft, does not list these three basins as being in "critical overdraft" nor does Bulletin 118 specifically identify them as overdrafted basins. The Watermasters for Chino Basin and Six Basins, as well as the pumpers of Cucamonga Basin are actively managing the basins to prevent overdraft. Entitlements based on City rights and stock ownership to the supplies within these three basins may vary depending on the established Operating Safe Yield (OSY) in a particular year, although they usually do not vary greatly year to year.

4.2.1 Chino Basin

The City is located in the northwestern portion of Chino Basin. Chino Basin is one of the largest groundwater basins in Southern California with a capacity of approximately six million acre-feet, of which one million acre-feet of storage capacity is unused. The City has five wells in the Chino Basin and

SAWCo has two wells. WECWCo does not have wells in Chino Basin; the City can pump WECWCo's entitlement if desired.

Water rights in Chino Basin were adjudicated in January 1978 in the Chino Basin Judgment (provided in Appendix C). The 1978 Judgment allocated the safe yield to three pools: Overlying Agricultural, Overlying Non-Agricultural, and Appropriative pools. The City is part of the Appropriative Pool and has rights to 5.202 percent of the safe yield allocated to the Appropriative Pool (54,834 acre-feet) for a total of 2,852 acre-feet. SAWCo and WECWCo also have rights in Chino Basin for 2.748 percent and 1.728 percent of safe yield, respectively.

In addition to the operating safe yield allocated to the members of the Appropriative Pool, the Chino Basin Watermaster reallocates the unused portion of the safe yield allocated to the Overlying Agricultural Pool to members of the Appropriative Pool as a supplement to their OSY rights in any year. For fiscal years 1989-90 through 2001-02, the average annual reallocation of agricultural pool safe yield was a total of 3,400 afy for the City, SAWCo, and WECWCo. This average was included in the groundwater supplies presented in Tables 16 and 17.

In 1998, the Watermaster developed an integrated set of water management goals and actions for the Basin. Known as the Optimum Basin Management Program (OBMP), nine program elements are intended to meet the water quality and local production objectives in the Chino Basin. The OBMP encourages the increased use of local supplies to help "drought proof" the Chino Basin. In July 2000, the "Peace Agreement" was adopted. The Peace Agreement, ending over 15 years of litigation within the Chino Basin, outlines the schedule and actions for implementing the OBMP.

As regulated by the Watermaster, Chino Basin pumpers are allowed to buy, sell, or save unused water allocations in storage, with a two percent annual carryover storage loss assessed. The Watermaster also allows for accrued storage credits for recharging the basin. Groundwater pumping rights are allowed to be exceeded. These exceedences result in assessments by the Watermaster to pay for replenishment water through imported surface water recharge. Water to replenish Chino Basin is purchased from MWD or an under producer by the Watermaster, in coordination with IEUA. MWD developed a Dry Year Yield (DYY) groundwater storage program in Chino Basin to increase supply availability during dry conditions. MWD agreed to provide funds to participating agencies (including Upland) to help construct new facilities in exchange for these agencies to shift imported water purchases from MWD's State Water Project (SWP) supplies to MWD's Chino Basin groundwater account, when requested.

Groundwater quality problems in the Chino Basin (nitrate, dibromochloropropane [DBCP], perchlorate) in the southern part of the City and poor production capabilities in the northern part of the City prevent the City from producing its full entitlement. The treatment of water produced by wells in the southwestern part of the City using ion exchange facilities increased the City's yield by 2,700 afy. This treatment plant has since been put on standby due to improvements in water quality allowing the City to blend Chino Basin supplies with other water sources.

Rehabilitation of Upland Basin in southwestern Upland (south of the College Heights Spreading Basins) was recently completed by the City to increase groundwater recharge within Chino Basin. The dead

storage capacity was increased to 1,250 acre-feet with a percolation rate of 18 inches per day. Upland Basin is currently used as a percolation basin for San Antonio Creek stormwater and drainage flows from the City's streets. San Antonio Creek water conveyed through the Army Corps of Engineers' San Antonio Channel is diverted into the basin by use of an inflatable dam controlled by IEUA. Heavy storm flows during December 2010 allowed Upland Basin to almost reach full capacity.

4.2.2 Cucamonga Basin

Cucamonga Basin is located in the northeastern part of the City, adjacent to the San Gabriel foothills. In 1958, a decree (provided in Appendix D) allocated groundwater within Cucamonga Basin to 24 parties, which today consist of WECWCo, SAWCo, and Cucamonga Valley Water District (CVWD). The Cucamonga Basin decree stipulates SAWCo's base water production as 4,500 afy. WECWCo has a right to pump 750 afy from Cucamonga Basin. Both SAWCo and WECWCo have the right to export 100 percent of their rights.

In Cucamonga Basin, the City owns Well No. 15, located near the northeastern City boundary. Groundwater produced from this well is attributed to the City's entitlements from SAWCo and WECWCo. This well produces water that does not have to be blended; water produced from more southern locations in the basin requires blending due to water quality concerns. Groundwater elevations measured in wells located in Cucamonga Basin show greater fluctuations than wells located in Chino Basin, likely due to the influence of recharge from precipitation. Because of the high water quality, the City uses this supply to the maximum extent possible. SAWCo has five wells (in addition to City Well No. 15) in Cucamonga Basin. WECWCo does not have any wells in this basin; the City pumps WECWCo's allocation from City Well No. 15.

Cucamonga Spreading Grounds and Colonies Basin are located along Cucamonga Creek near the Upland/Rancho Cucamonga border. They are operated by San Bernardino County Flood Control District for flood protection and recharge. The Cucamonga decree indicates that if SAWCo does not spread 2,000 afy of imported water (except for years of high water levels or "excluded years") over a rolling ten year period to the Cucamonga Basin, then its allowable pumping is reduced by said deficit. SAWCo has the right to increase its extractions from the basin above 6,500 afy by 95 percent of the ten year surplus divided by the number of "included years" up to 2,000 acre-feet for any given calendar year. Imported water is defined in the decree as "...water derived from a stream flow in an area outside of any water shed draining into the Cucamonga Basin. "

4.2.3 Six Basins

Non-Tunnel Groundwater. The Six Basins adjudicated groundwater basin is located in the northwestern portion of the City. Six Basins consist of "Four Basins": Canyon (San Antonio Canyon), Upper Claremont Heights, Lower Claremont Heights, and Pomona basins; and "Two Basins": Ganesha and Live Oak basins. As an adjudicated basin, groundwater rights of Six Basins are judicially imposed under a 1998 Judgment with a set initial OSY for Four Basins at 19,300 afy. The OSY averaged approximately 19,300 afy between 2001 and 2009, however the OSY has continually decreased from 24,000 in 1999 to a low of 16,000 in 2006 and 2007 (SAWCo, 2009). The OSY for 2010 and 2011 increased to 17,500 afy.

Under the Judgment, located in Appendix E, the City is entitled to 9.544 percent of the OSY while SAWCo and WECWCo are entitled to 7.166 percent and 15.399 percent, respectively. The base annual percentage is applied to the Watermaster established OSY to update annual allowances; Watermaster uses a hydrologic balance calculation, taking into consideration water level elevations, recharge activities, extraction, water quality data, precipitation data, and the probable availability of imported water. Six Basins Watermaster members include cities of La Verne, Pomona, Claremont, and Upland, SAWCo, Golden State Water Company (GSWC), Pomona Valley Protective Association (PVPA), Pomona College, and Three Valleys Municipal Water District (TVMWD). Four Basins is actively managed by the Watermaster.

Carryover of 25 percent of annual allocation or unused balance, whichever is less, is allowed. Annual over pumping in Four Basins is allowed with no specified upper limit. These exceedences result in assessments by the Watermaster to pay for replenishment water through imported surface water recharge, similar to Chino Basin. An exception is made for "Special Projects", projects controlling water levels or for remediation of water quality problems. Special projects are exempt from replenishment obligation. Imported water deliveries are allowed for replenishment obligation or for additions to storage/recovery accounts.

The City has one producing well and one inactive well (due to water quality issues) in Canyon Basin, located behind San Antonio Dam. The Canyon Basin groundwater is conveyed through the dam to the treated water reservoir. The City has two wells that pump from Upper Claremont Heights Basin. WECWCo has four wells in Upper Claremont Heights Basin while SAWCo has two.

Existing facilities used for spreading of surface water include San Antonio Spreading Grounds, Thompson Creek Spreading Grounds, Pomona Spreading Grounds, TVMWD Miramar Basins, and Live Oak Spreading Grounds. The recharge facilities receiving San Antonio Creek waters are described below. Groundwater elevations measured in wells located in Six Basins show greater fluctuations than wells located in the Chino Basin, likely due to the direct influence of recharge from precipitation.

PVPA is the owner of the San Antonio spreading grounds and facilities. The spreading grounds are currently operated by WECWCo under an operating agreement with PVPA. The spreading grounds are divided into two sections commonly referred to as the Los Angeles and San Bernardino County sides. San Antonio Creek flows are conveyed through the dam to the diversion chamber immediately downstream of the dam. From the diversion chamber, flows are routed to Berms 1, 2, and 3 on the San Bernardino County side and to Berms 1 through 5 on the Los Angeles County side.

Downstream of the berms on the San Bernardino County side, SAWCo is able to spread excess water from its irrigation system via Reservoir 9. Additionally, the SAC WTP backwash is conveyed to Reservoir 9 for recharge; however, it is currently unmetered and flows are credited to SAWCo's storage and recovery agreement in Six Basins. This spreading ground is presently percolating at 3.5 feet per day.

Tunnel Water - SAWCo has water rights to Canyon Basin water captured in San Antonio Tunnel, located upstream of San Antonio Dam. This "Tunnel Water" flow has ranged from 10 to 4,171 acre-feet, with a base flow of 1,050 afy (SAWCo, 2009) and an average flow of 2,100 afy (Upland WSA, 2005). The tunnel

captures water that naturally percolates through the soil in the basin, approximately 100 feet below the ground surface. A portion of San Antonio Creek streamflow is diverted, when available, to spreading grounds above the tunnel (called San Antonio Creek Spreading Grounds or Tunnel Ponds) which are located adjacent to North Mountain Avenue. Water collects in the deep rock tunnel, is piped to SAWCo's Forebay, chlorinated, and conveyed to SAWCo's potable water reservoirs to serve domestic customers.

San Antonio Creek Spreading Grounds or Tunnel Ponds, operated by SAWCo, are located upstream of Tunnel capture facilities behind the San Antonio Dam. San Antonio Creek water is diverted from the Edison Box to these ponds which allow for infiltration (at 3.5 feet per day) to the Tunnel capture facilities.

4.2.4 Groundwater Production

The amount of groundwater pumped over the previous five years is presented in Table 18. There were no limitations or challenges in obtaining groundwater during this five year period.

Table 18
Groundwater — Volume Pumped (afy)

Basin Name	Metered or Unmetered	2006	2007	2008	2009	2010
Chino Basin	Metered	2,174	2,638	4,021	5,857	3,342
Six Basins	Metered	6,421	6,318	5,004	5,348	5,666
Cucamonga Basin	Metered	6,655	8,381	6,431	6,706	4,770
Total Groundwater Pumped		15,250	17,336	15,456	17,911	13,778
Groundwater as a % of Total Water Supply		70%	73%	69%	82%	69%

Table 19 presents the amount of groundwater anticipated to be pumped by basin for City needs. Pumping projections were based on the average year City groundwater entitlement of 17,668 afy (70.6 percent). The actual volume pumped will be determined by demands and availability of local surface water. The total water supply which the total pumped was compared with was based on the average quantities of availability of local surface, imported, and recycled water supplies.

Table 19
Groundwater — Volume Projected to be Pumped (afy)[1]

Basin Name	2015	2020	2025	2030	2035
Chino Basin	7,388	7,388	7,388	7,388	7,388
Six Basins	5,008	5,008	5,008	5,008	5,008
Cucamonga Basin	5,272	5,272	5,272	5,272	5,272
Total to be Pumped	17,668	17,668	17,668	17,668	17,668
Percent of Total Water Supply	66%	66%	66%	66%	66%

[1]Based on groundwater entitlements by basin.

The wells have a greater production capacity than what is needed under average water year conditions. This is to ensure reliability of the system and to meet demands when the availability of local surface supplies is reduced due to climatic conditions, or if a well is off-line.

4.3 Local Surface Water

The availability of SAWCo's San Antonio Creek supply is highly dependent on local precipitation and snow pack; it is substantially less in dry years with surplus flows in above average years. The City does not have surface water rights to this supply but purchases raw water from SAWCo for treatment at its SAC WTP.

4.3.1 SAWCo Rights to San Antonio Creek

SAWCo has pre-1914 surface water rights to San Antonio Creek. Water is released from an outlet from Southern California Edison power generation facilities, and conveyed to the "40/60 split". The 40/60 structure then physically divides the flow through a weir with 60 percent of flow diverted to SAWCo and 40 percent to the City of Pomona. This non-potable supply of SAWCo is conveyed to the Forebay before entering SAWCo's irrigation distribution system. When flows are too high or too turbid, San Antonio Creek runoff is released into or remains in San Antonio Creek where it is conveyed to low lying areas behind San Antonio Dam.

According to the SAWCo master plan, the annual amount of water available from San Antonio Creek has varied greatly up to 11,000 afy, averaging 6,250 afy. Production amounts vary greatly depending on rainfall and snow conditions in the San Antonio Creek watershed which rises to an elevation of 10,068 feet (msl) at Mount San Antonio. Between 1990 and 2003, the annual surface water supply captured ranged from a low of 202 afy to a high of 4,297 acre-feet.

4.3.2 City Share of San Antonio Creek Supply

SAWCo historically has diverted the City's share of raw water to the City-owned SAC WTP, located at the base of San Antonio Dam. The direct filtration treatment plant has a 6 million gallons per day (mgd) capacity with a 5 million gallon (mgal) treated water reservoir at the site. The City often refers to this local treated surface supply as Canyon water. The City's share of Canyon water yields an average of 2,324 afy.

4.4 Imported Water

The City purchases imported water from IEUA which is a member agency of MWD. MWD's primary water supplies are from the SWP (imported from the Delta) and the Colorado River, however, the supply reaching the City is from the SWP. More information on MWD supplies can be found in its 2010 RUWMP. The Rialto Feeder conveys untreated MWD water to the Water Facilities Authority/Joint Powers Authority Agua de Lejos WTP (WFA), located in the City of Upland. The treated supply is then conveyed to the City distribution system.

As the MWD member agency, IEUA currently has a Tier 1 allocation of 59,752 acre-feet on an average annual basis which is decreased during dry years or under other constraints. IEUA provides imported water to CVWD, WFA, and Fontana Water Company. As long as the Tier 1 allocation for IEUA is not exceeded in total by its member agencies, the City can purchase as much water as is available, but may have to pay higher rates. The City has a Tier 1 allocation for WFA supply based on a ten year rolling average of its previously purchased supplies. Purchases above the ten year rolling average are available to the City but are assessed at Tier II rates. Through 2009, the City purchased a ten year average of 5,678 acre-feet. The City owns 23 percent of the total 81 mgd capacity in WFA, which entitles the City to 18.6 mgd of plant capacity.

4.5 Transfer and Exchange Opportunities

As IEUA describes in its 2010 UWMP, water transfers have great potential to help alleviate shortages during droughts or emergencies. A buyer and a seller can enter into an exchange agreement that is mutually beneficial, allowing an agency to "move" water from one service area to another, even when the two agencies are not connected physically. The Chino Basin is expected to prove a valuable resource for water transfers because of its ability to store water and its storage capacity of up to 6 million acre-feet.

The City shares several interconnections with other water purveyors. These interconnections are used during planned system outages, emergency outages, and for exchanging supplies on an as-needed basis. In addition to physical connections, the City sells or conveys water on paper without the physical conveyance of the supply. These are called in-lieu agreements or paper exchanges. The Judgments or decree for each groundwater basin allow for water supply transfers and exchanges if approved in advance by the Watermaster. Sales and/or exchanges with MVWD, Fontana Water Company, Chino Basin Watermaster, and the City of Pomona have taken place in previous years.

The City has no plans for contractually committing to any future short term or long term water transfers or exchanges, with the exception of irrigation water provided for UHCC, as reflected in Table 20. UHCC has historically used irrigation water provided by SAWCo for its golf course and City supplied water for other facilities. The City entered into an agreement with UHCC to supply almost 400 afy of recycled water for irrigation.

Table 20
Transfer and Exchange Opportunities

Transfer Agency	Transfer or Exchange	Short or Long Term Quantities	Proposed Volume (afy)
SAWCo	Transfer	Long Term	400
SAWCo	Exchange/Lease	Short Term	TBD
		Total	400

4.6 Desalination Water Opportunities

As more water is recharged in the upper alluvial fans of the Chino Basin, groundwater production in the lower portion of the basin needs to be managed to ensure that Chino groundwater is not lost to the Santa Ana River and that poor quality water in the lower portion of the Chino Basin does not reach downstream basins. To retain hydraulic control, desalter facilities have been constructed (operated by the Chino Basin Desalter Authority) at the down gradient end of the Chino Basin, near the Santa Ana River. The current capacity of the desalter facilities is 27,600 afy; an expansion is underway to increase the capacity to 40,000 afy. The expansion is expected to be complete by 2012 (IEUA, 2011). Chino Desalter 1 (serving Chino and Chino Hills) and the Chino Desalter 2 (serving Jurupa Community Services District, Ontario, Norco, and the Santa Ana River Water Company) are operational.

The City of Upland does not directly participate in the desalters, except as a member agency of IEUA. It is possible for the City to participate in later phases of the desalter project if needed; for this UWMP it is assumed the City is not a participant.

4.7 Recycled Water Opportunities

Recycled water provides a reliable and drought proof water source and could greatly reduce the region's reliance on imported supplies. Currently the City does not utilize or directly serve recycled water to any of its customers. However, the City has been working closely with IEUA to implement a regional recycled water program for direct distribution as well as a potential groundwater replenishment program. Direct recycled water delivery to customers is expected to commence by the end of 2011.

4.7.1 Wastewater System Description and Wastewater Disposal

IEUA manages the Regional Sewage Service System within its 242-square miles service area to collect, treat and dispose of wastewater delivered by contracting local agencies. IEUA's facilities serve seven contracting agencies: the cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Cucamonga Valley Water District and Upland. A system of regional trunk and interceptor sewers convey sewage to regional wastewater treatment plants, which are all owned and operated by IEUA. Local sewer systems are owned and operated by local agencies. IEUA operates four regional water recycling production plants: Regional Plant No. 1 (RP-1), Regional Plant No. 4 (RP-4), Regional Plant No. 5 (RP-5), and the Carbon Canyon Water Reclamation Facility (CCWRF) (IEUA, 2011).

Most of the wastewater generated within in the City is collected and conveyed by the City to RP-1 located in the City of Ontario. A portion of the flow from the City can be conveyed to the CCWRF or pumped to RP-1 via the Montclair Lift Station and Montclair Interceptor. The IEUA 2010 UWMP assumed all flows going through the Montclair Interceptor are routed to RP-1.

RP-1 facility began operation in 1948 through a joint powers agreement between the cities of Ontario and Upland. IEUA, then know as Chino Basin Municipal Water District, purchased RP-1 in January 1973. The current capacity of RP-1 is 44 mgd and is projected to be expanded to 60 mgd after 2020. RP-1 serves all or parts of the cities of Upland, Ontario, Rancho Cucamonga, Montclair, Fontana, and unincorporated areas of San Bernardino County with a current average day flow of 31.8 mgd.

The CCWRF has been in operation since 1992. The recycled water plant capacity is 11.4 mgd, while solids are treated at RP-2. CCWRF current average day flows are 9 mgd. CCWRF serves the cities of Upland, Chino, Chino Hills, and Montclair.

The raw sewage at RP-1 and CCWRF is passed through screening and grit removal units, primary clarifiers, aeration basins, secondary clarifiers, chemical addition, tertiary filters, chlorination, and finally dechlorination facilities prior to discharge. Some of the effluent flow is placed into nearby creeks and allowed to flow ultimately into the Santa Ana River where it is recharged into Orange County's groundwater basin. Other flows are pumped into IEUA's recycled water distribution system for reuse. All of the water produced from RP-1 is highly polished, tertiary-treated water suitable for irrigation, industrial water supply, groundwater recharge, environmental enhancement, and unrestricted recreation use such as boating and fishing.

Based on a unit flow factor of 70 gpcd provided by IEUA derived from the IEUA service area average, the City currently generates approximately 5.3 mgd (6,000 afy) of wastewater which is treated at RP-1 and CCWRF. Flow projections based on population projections are presented in Table 21. All wastewater from this plant is treated to recycled water standards.

Table 21

Recycled Water — Wastewater Collection and Treatment

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater Collected and Treated in Service Area[1] (mgd)	5,802	5,782	5,968	6,155	6,248	6,341	6,434
Volume that Meets Recycled Water Standard[2]	100%	100%	100%	100%	100%	100%	100%

[1]Based on IEUA flow factors of 70 gpcd .
[2]Based on treatment requirements of IEUA RP-1.

From its various plants, IEUA currently provides recycled water to customers in adjacent cities such as Chino, Chino Hills, Montclair, Ontario, and Rancho Cucamonga. By 2015, IEUA anticipates that discharges to the Santa Ana River from all plants will be reduced to the minimum 17,000 afy as required by the 1969 Orange County Judgment, with the remaining volume recycled for direct use for through basin recharge.

According to the IEUA 2010 UWMP, recycled water usage has increased dramatically in recent years. 20,751 acre-feet of recycled water from RP-1/RP-4 was utilized in 2008-09 out of 43,363 acre-feet total plant flow; almost 50 percent utilization. During 2007-08, 5,540 acre-feet was utilized, approximately 12 percent of plant flow. For CCWRF, recycled water utilization in 2008-09 was 2,782 acre-feet out of a total plant flow of 11,081; similar to 2007-08.

Table 22 presents quantities of wastewater from all of the IEUA treatment facilities that will not be recycled, and the disposal method, which is discharge to the Santa Ana River. IEUA projects to maximize utilization of recycled water between 2010 and 2025, allowing only 17,000 afy to be discharged to the

Santa Ana River. The 17,000 afy indicated in Table 22 is an average minimum flow established under the 1969 Santa Ana River Judgment. Total supplies will reach 107,000 by 2020 leaving about 90,000 afy available for reuse.

Table 22
Recycled Water — Non-recycled Wastewater Disposal (afy)

Method of Disposal	Treatment Level	2010	2015	2020	2025	2030	2035
Santa Ana River Discharge[1]	Tertiary	32,638	17,000	17,000	17,000	17,000	17,000
	Total	32,638	17,000	17,000	17,000	17,000	17,000

[1] Source: IEUA 2010 Draft UWMP; 2010 based on 2009 flows. 17,000 is a minimum average discharge required under the 1969 Santa Ana River Judgment.

4.7.2 Current and Projected Recycled Water Uses

Recycled water to be provided to Upland will be produced by IEUA at its RP-4 located in the City of Rancho Cucamonga and at times from RP-5 located in the City of Chino. According to the City 2010 Water System Master Plan Update (WMP), approximately 900 acre-feet of recycled water is planned to be utilized directly within the City by 2015 and 1,300 afy by 2020 (Carollo, 2010). Recycled water will be utilized for direct irrigation delivery starting with the UHCC in late 2011.

Since the City pumps groundwater from Chino Basin which is replenished partially with recycled water, and the City service area contributes to these recycled water supplies, the average amount of recycled water for indirect potable reuse associated with City pumping was identified. Of the annual recycled water recharged, IEUA allocates the replenishment credit to individual agencies proportionately based on their annual respective wastewater flow contributions. As discussed above, the system will continue to be expanded to replenish greater quantities of recycled water for direct use and for recharge benefitting agencies in the IEUA service area.

IEUA currently recharges 6,300 afy of recycled water, 2015 recharge is planned to be 25,000 acre-feet, increasing to 28,000 acre-feet by 2020, and 35,000 acre-feet for 2025 through 2035. The City's portion was calculated based on its wastewater flow contributions. Using the flow projections from Table 21, minus a loss factor of 10 percent, the City's allocation of recharged recycled water is 5,450 acre-feet in 2015 increasing to 5,790 acre-feet in 2035, as presented in Table 23. This is in addition to the amount purchased from IEUA for direct recycled water use which is also presented in Table 23. The indirect potable reuse quantities will ensure that the City achieves its 2020 per capita target of 218 gpcd as the total 2020 recycled water utilization of 6,350 afy (minus UHCC), or 72 gpcd, offsets potable demands. Table 23 presents a summary of all planned future uses of recycled water by the City.

Table 23
Recycled Water — Potential Future Use (afy)

User Type	Description	Feasibility	2015	2020	2025	2030	2035
Agricultural Irrigation		No	0	0	0	0	0

Landscape Irrigation	Irrigation of City lands	Yes	414	814	814	814	814
Commercial Irrigation		No	0	0	0	0	0
Golf Course Irrigation	Upland Hills Country Club Golf Course	Yes	486	486	486	486	486
Wildlife Habitat		No	0	0	0	0	0
Wetlands		No	0	0	0	0	0
Industrial Reuse		No	0	0	0	0	0
Groundwater Recharge	In Upland Basin	Yes	0	To be determined in future			
Indirect Potable Reuse	IEUA Groundwater Replenishment	Yes	5,370	5,540	5,620	5,710	5,790
Other (User Type)		No	0	0	0	0	0
	Total		6,270	6,840	6,920	7,010	7,090

The City is evaluating the feasibility of acquiring additional recycled water for recharge in Chino Basin. However, the feasibility of recharge and amount to be purchased will depend on many factors, including permits, economics, etc. As presented in Table 24, the City's 2005 UWMP did not project use of recycled water.

Table 24		
Recycled Water — 2005 UWMP Use Projection Compared to 2010 Actual		
Use Type	2010 Actual Use	2005 Projection for 2010
Agricultural Irrigation	0	0
Landscape Irrigation	0	0
Commercial Irrigation	0	0
Golf course Irrigation	0	0
Wildlife Habitat	0	0
Wetlands	0	0
Industrial Reuse	0	0
Groundwater Recharge	0	0
Indirect Potable Reuse	0	0
Other (User Type)	0	0
Total	0	0

4.7.3 Recycled Water Optimization

Direct use of recycled water will soon be available to the City. The City can optimize the direct use of recycled water using specific methods to encourage recycled water use, as indicated in Table 25. These efforts include assurances of a highly reliable water supply not subject to droughts or imported availability, as well as financial incentives in the form of reduced water rates and paid retrofitting costs. The City plans to offer recycled water at 10 percent lower than its base potable water rate. Furthermore, the City assumes all on-site retrofit costs; customers will assume no out-of-pocket expenses for converting to recycled water.

Table 25						
Methods to Encourage Recycled Water Use						
	Projected Results (afy)					
Actions	2010	2015	2020	2025	2030	2035
Financial incentive, high reliability	0	900	1,300	1,300	1,300	1,300
Total	0	900	1,300	1,300	1,300	1,300

4.8 Future Water Projects

4.8.1 City Future Water Projects

The City plans future water supply projects to increase its water supply quantities, while reducing dependence on imported water. These potential supply projects are summarized in Table 26.

Table 26								
Future City Water Supply Projects (afy)								
						Multiple Dry Years		
Project Name	Projected Start Date	Projected Comple-tion Dates	Potenti al Project Con-straints	Normal Year Supply	Single Dry Year Supply	First Year Supply	Second Year Supply	Third Year Supply
Recycled Water	Construc-tion Underway	2011 and 2020	None	1,300	1,300	1,300	1,300	1,300
Indirect Potable Recharge[1]	Underway	2020	None	5,790	5,790	5,790	5,790	5,790
SAWCo Surface Water Capture Improvements	Studies Underway	2020	None	Avg year quantities to be determined	0	0	0	0
			Total	7,090	7,090	7,090	7,090	7,090

[1] IPR reflects 2035 quantities of recycled water attributable to the City minus loss factor.

Recycled Water - As discussed under recycled water, the City is developing a recycled water system to accommodate 1,300 afy of purchased recycled water. Service to the UHCC in the first phase of the program is underway now with completion anticipated in 2011. Expansion of the system is anticipated to be completed by 2020.

Indirect potable replenishment of Chino Basin is underway by IEUA. This program is anticipated to yield for the City 6,350 acre-feet by 2020.

Upland Basin - Recycled water may be recharged in Upland Basin. MWD supplies may also be utilized in the future for recharge in Upland Basin. The recharge potential is 8,250 afy although this amount would depend on stormwater flows and availability of these supplies.

4.8.2 Regional Agency Future Water Projects

The IEUA 2010 UWMP discusses a number of water supply opportunities in San Bernardino County undertaken by IEUA to enhance supplies, including transfers and exchanges, desalination, and further uses of recycled water. MWD's 2010 RUWMP also identifies programs underway and planned, to increase their supply portfolio.

IEUA Projects. The IEUA 2010 Draft UWMP discusses current management strategies IEUA is implementing and considering expanding. These include the following efforts.

- Continue development of the groundwater recovery program with treatment facilities.
- Maximize reuse of all available recycled water by increasing the ability to serve major industrial and municipal users while delivering recycled water to groundwater recharge basins.

- Expand the Chino Basin groundwater conjunctive use program for dry year water supplies for Chino Basin and parts of the Santa Ana River watershed.
- Maximize capture, recharge, and use of all available stormwater supplies.
- Implement effective and innovative water use efficiency programs to meet requirements of CUWCC BMPs, AB 1420 requirements, SBx7-7 20 percent reduction, and anticipated future conservation legislation and regulations.

Additional supplies may be pursued to minimize dependence on imported supplies. Future programs are summarized here.

- Groundwater recovery through the Desalter Program
- Expand recycled water utilization to include dual plumbing
- Expand groundwater storage through the use of new aquifer storage and recovery facilities, wells, and treatment facilities, and work with MWD to expand the existing conjunctive use program
- Enhance stormwater management programs to capture the maximum amount of stormwater as identified in the recently developed Chino Basin Recharge Master Plan and the Chino Basin Facilities Improvement Project.
- Water use efficiency through a portfolio of active programs, passive policy initiatives, and the use of recycled water.
- Dual plumbing for gray water systems will be encouraged in newly constructed homes and businesses to divert water from washing machines, bathtub, or shower onto the landscaping.

MWD Projects - MWD's 2010 RUWMP discusses opportunities to enhance and maintain imported supplies in conjunction with its 2010 Integrated Water Resources Plan Update. According to MWD's 2010 RUWMP, it is continuing to diversity its supply resource mix to increase long term regional water supply reliability. These efforts have been focused on the following programs and actions.

- Pursue long term storage solutions for the Delta
- Develop storage programs related to the SWP and Colorado River
- Develop storage and groundwater management programs within Southern California
- Increase conservation
- Increase water recycling, groundwater recovery, and seawater desalination
- Develop water supply management programs outside of the region

Detailed descriptions of these and other projects are provided in MWD's 2010 RUWMP along with supply quantities anticipated under normal and dry year conditions.

4.9 Climate Change Impacts

Climate change and or greenhouse gas (GHG) emissions are considered in city and county general plans, California Environmental Quality Act documents, and integrated regional water management plans (IRWMP). By considering potential water supply impacts resulting from climate changes in its UWMP, the City integrates its UWMP with these documents and supports water management functions. The City is a member of the IRWMP for Santa Ana River Watershed; the Santa Ana River Watershed IRWMP document contains or will contain climate change objectives. Information on the vulnerability of its water supplies and service area water demands is provided here to aid the City in preparing for and adapting to expected climate change impacts. Water conserved under the City's conservation program has a direct correlation with reduced GHGs as energy is required to move, treat, use, and discharge water.

4.9.1 Surface Supplies and Service Area Impacts

According to the Public Policy Institute of California,

> "...Air temperatures are projected to increase throughout the state over the coming century. Sea level is expected to rise 39 to 55 inches by 2100, and the frequency of extreme events such as heat waves, wildfires, floods, and droughts is expected to increase. Higher temperatures will result in more rain and less snow, diminishing the reserves of water held in the Sierra Nevada snowpack."(PPIC, 2011)

The following impacts to the City's local and imported surface water supplies are anticipated to result in reduced local surface water, reduced availability of current imported supplies, and imported supply outages. Much work has been done to identify climate change impacts to the State water resources, therefore more information is provided here that is directly relevant to MWD's SWP supplies from the Sacramento River - San Joaquin River Delta (Delta).

- An increase in average surface temperatures of 5.5 to 10.4 degrees Fahrenheit is anticipated by the end of the century, resulting in up to four times as many heat wave days in urban centers.
- Heat waves will increase in frequency, magnitude, and duration.
- Longer, drier, and more frequent periods of droughts anticipated with up to 2.5 times the number of critically dry years by the end of the century. Modest changes in precipitation can have a large impact on runoff. Lower inflows will make it more difficult to repel salinity in the Delta.
- About 25 to 40 percent of the Sierra snowpack may be lost by 2050. Higher temperatures increase the ratio of rain to snow, accelerate the rate of spring snowmelt, and shorten the overall snowfall season, leading to more rapid and earlier seasonal runoff.
- Over 55 percent increase in risk of large wildfires is anticipated. Fires result in changes in vegetation and eventually a reduction in water supply and storage capacity in the Sierras.
- More severe (e.g., frequency, intensity) and warmer winter storms are likely to occur, increasing runoff and flooding which could cause Delta levee failure.

- Increased tidal salinity intrusion to the Delta from sea level rise, lower inflows, and Delta levee failures. Without major changes to in-Delta facilities, more fresh water will be needed to repel seawater and maintain water quality standards, especially during drier years.
- Degraded water quality of Delta supplies is anticipated due to changing temperatures, flows, runoff rates and timing, and the ability of watersheds to assimilate wastes and pollutants. Lower Delta inflows during certain times of the year will degrade water quality by increasing temperatures and minimizing the dilution effects of runoff and wastewater discharges. Warmer water can accelerate some biological and chemical processes, increasing growth of algae and microorganisms. Higher winter flows will increase contaminant loadings from nonpoint sources. Intense rainfall following wildfires can degrade water quality. (Santa Barbara, 2009)

Since winter snowpack in the Sierra Nevada functions as a major water storage system, this will have serious consequences to annual supply availability in all systems that rely on the runoff. These impacts to Statewide water supplies originating from the Delta watershed, as well as current flood control practices on Sierra Nevada reservoirs, will reduce MWD's supplies from the SWP. In addition, flooding in the Delta could have devastating impacts on the reliability of Delta exports with supply outages anticipated for up to one year. MWD is anticipating these impacts and is diversifying its supply portfolio and increasing groundwater banking to compensate for reduced SWP deliveries.

Colorado River flows are anticipated to decrease by 5 to 20 percent in the next 40 years, according to Brad Udall, director of the University of Colorado Western Water Assessment. Earlier runoff and lower flows from the Rocky Mountains later in the year are also anticipated (Zeilinski, 2010). Impacts to the Colorado River supply affect all MWD customers.

4.9.2 Water Demands

Climate change is anticipated to impact water demands through more frequent and more intense heat waves and extended dry periods which will cause increases in demands in the City. This is evident in demand patterns associated with the first dry water year. It is not known yet if changes in precipitation patterns will offset these increases. In addition, with drier conditions, fires will likely be more frequent, thus increasing demands for City water supplies used for suppression.

DWR recommends for long term planning that local agencies assume a 20 percent increase in the frequency and duration of future dry conditions. On a positive note, it may be likely that with the changes to climate patterns, more monsoon conditions will occur in Southern California, resulting in precipitation in the summer, reducing outdoor landscaping demands.

4.9.3 Groundwater Supply

The Watermaster's conjunctive use management of each of the groundwater basins will take on even greater importance as more frequent and more intense heat waves and extended dry periods deplete resources and increase demands for those resources. Increased quantities of surface water will likely be imported to recharge the basins. With the reduced Sierra snowpack, groundwater storage throughout the State will be more important as early thaws will require new storage facilities to be made available.

Because climate change is such a gradual process, it can be difficult to distinguish these changes from the usual variability in supplies and demands. However, MWD is increasing its water supply options to compensate for SWP and Colorado River reductions. The City will continue to adapt to changing conditions within its service area as well as maintain its aggressive water use efficiency efforts to reduce GHGs.

Section 5 Supply Reliability and Water Shortage Contingency Planning

UWMP Act: *10631 (c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable and provide data for each of the following: (A) An average water year. (B) A single dry water year. (C) Multiple dry water years.*
10631 (c) (2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.
10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:
10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage
10632 (b) An estimate of the minimum water supply available during each of the next three-water years based on the driest three-year historic sequence for the agency's water supply.
10632 (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster
10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning
10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply
10632 (f) Penalties or charges for excessive use, where applicable .
10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
10632 (g) An analysis of the impacts of each of the proposed measures to overcome those revenue and expenditure impacts, such as the development of reserves and rate adjustments.
10632 (h) A draft water shortage contingency resolution or ordinance.
10632 (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631 and the manner in which water quality affects management strategies and supply reliability.
10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from the state, regional, or local agency population projections within the service area of the urban water supplier.

5.1 Water Supply Reliability

During the previous five years, Southern Californians faced significant changes to their water supply. There has been an extended drought on the Colorado River and the need to develop a long term Delta solution. An extended dry period began locally in 2007. In December of 2008, a federal court decision restricted SWP pumping from the Delta. Because of the potential for water shortages, water allocations for IEUA were imposed by MWD. The City's imported and local surface water supplies are vulnerable to

seasonal or climatic shortages. Imported supplies are vulnerable to catastrophic events during conveyance.

The City has been proactive in adopting a water shortage contingency plan to plan for the response to emergencies or other external events. The City also had the foresight to expand its portfolio of supplies to reduce its vulnerability to seasonal and climatic variability. The local surface water supply may be most vulnerable to shortages, but this supply is augmented with groundwater and imported supplies. The City has worked hard to maximize its local resources to minimize imported water use. However, imported purchases remain an important source of supply. The City is committed to maximizing the efficient use of existing local supplies and to managing all supplies available to it to ensure that adequate supplies will be available to meet future water demands.

5.1.1 Influencing Factors

Factors that could potentially influence the reliability of City supplies include legal, environmental, water quality, and climatic factors. Although climatic factors affect all water supplies, only severe climatic influences on the reliability of imported and local surface waters, as with a drought, will directly affect City supply availability, as indicated in Table 27.

Although the imported MWD supply is not the primary water supply, it is an important supply for the City to augment local surface water and groundwater supplies. The imported supply has historically come from the SWP because of water quality limitations associated with the Colorado River supply. The imported water conveyed from the Delta was curtailed in recent years due to drought conditions in the Feather River watershed and court ordered Delta pumping restrictions. As a result, MWD has aggressively pursued and obtained additional supplies to augment the sources, and is continuing to acquire additional supplies to diversify its portfolio.

Table 27 (DWR Table 29)

Factors Resulting in Inconsistency of Supply

Water Supply Sources[1]	Limitation Quantifi-cation	Legal	Environ-mental	Water Quality	Climatic	Additional Informa-tion
WFA/IEUA/MWD Imported Water	None	X	X		X	
SAWCo Surface Water	Variable				X	
SAWCo Groundwater	None					
WECWCo Groundwater	None					
City Groundwater	None					
Recycled Water	None					

[1]Sources from Table 16.

The constraint on the availability of local surface water is climatic conditions. Although this is a favored supply for the City, it is not relied on annually due to the variability of weather conditions. The only constraint on the availability of imported supplies is cost, particularly when MWD's Water Supply Allocation Plan is in effect. As previously discussed, MWD has an extensive supply augmentation program to assure its member agencies that imported supplies will be reliable through 2035.

5.1.2 Water Quality

In general, average historical nitrate concentrations are lowest in City wells located nearest to sources of surface water spreading, such as at San Antonio Dam, along San Antonio Creek, or at the Cucamonga Spreading Grounds. Nitrate levels exceeding the MCL of 45 mg/L are limited to wells located in the southern area of the City. Average historical total dissolved solids (TDS) concentrations are below the secondary maximum contaminant level (MCL) of 500 milligrams per liter (mg/L) in all City wells. Highest average TDS concentrations generally occur in wells with higher nitrate concentrations.

Groundwater quality problems in the Chino Basin require that the City blend water from some wells with other supplies. In the southwest area of the City, wells exceeding MCLs for nitrate and DBCP have to be blended. An ion exchange (IX) plant was developed to optimize the use of local supplies during extended drought periods. This facility is presently in limited use due to improved water quality conditions elsewhere in the basin along with changed economic conditions.

In the southeastern part of the City, Well 9 exceeded the MCL for tetrachloroethylene (PCE) and nitrate. This well is downstream from the Sanitary Landfill, which operated from 1950 to 1979 as an unlined municipal solid waste disposal site. As presented in Table 28, the water quality conditions described here will not limit the availability of supplies in the future.

Table 28 (DWR Table 30)

Water Quality — Current and Projected Water Supply Impacts (afy)

Water Source	Description of Condition	2010	2015	2020	2025	2030	2035
Chino Basin	See text; blending required with some wells	0	0	0	0	0	0

5.2 Drought Planning

Climatological data in California has been recorded since the year 1858. During the twentieth century, California experienced three periods of severe drought: 1928 to 1934, 1976 to 1977 and 1987 to 1992. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by DWR. These rivers flow into the Delta and are the source waters for the SWP, thus MWD's selection as the single driest base year. However, Southern California sustained few adverse impacts from the 1976 to 1977 drought, due in large part to the availability of Colorado River water and stored groundwater. The 1987 to 1992, 2000 to 2003, and 2007 to 2009 droughts had a greater impact on Southern California.

5.2.1 Basis of Water Years

To analyze the variability of reliability due to climate, hydrologic conditions that define year types were determined. The years identified in Table 29 reflect these water year types: average, single dry year, and multiple dry years. Water year types are defined below.

Table 29 (DWR Table 27)		
Basis of Water Year Data		
Water Year Type	**Supply Source**	**Base Years[1]**
Average/Normal Water Year	Local Surface and Groundwater	2006 (based on 1999-2009)
	Imported MWD	1922-2004
Single Dry Water Year	Local Surface and Groundwater	2002
	Imported MWD	1977
Multiple Dry Water Years	Local Surface and Groundwater	2002-2004
	Imported MWD	1990 to 92

[1] MWD base years from 2010 RUWMP. Local base years reflect local conditions. 2006 yield best matches average year City production.

Normal/Average Year: The normal or average year most closely represents median runoff levels and patterns. The supply quantities for this condition were derived from historical average production yields. The average production from 2000 to 2009, on a per capita basis to remove affects of growth, was 270 gpcd. Since 2006 resembled an average water year locally, this per capita consumption and average yield for all of the City supplies somewhat matches 2006 production, this year was selected to represent average year conditions for local supplies. For imported water, MWD used 1922 through 2004 to establish this normal year.

Single Dry Year: The supply quantities for this condition are derived from the minimum historical annual usable yield. Although dry weather conditions in Southern California started in 2000 and lasted for several years, the City's allocation of San Antonio Creek surface water purchased from SAWCo was the lowest during 2002; therefore 2002 was considered the single dry year for local supplies. For imported water, MWD identified 1977 as the single driest year since 1922.

Multiple Dry Years: This is defined as three consecutive years with the minimum useable yield or supply. Water systems are more vulnerable to these droughts of long duration, because they deplete water storage reserves in local and state reservoirs and groundwater basins. Although 2001 and 2002 were the driest years on record for rainfall in the Prado region with 5.08 inches of precipitation, 2002 through 2004 were used as base years for multiple dry years for the City. This is because 2002 to 2004 reflected two years of extremely low availability of local surface waters with an average yield in between. The low flows in San Antonio Creek during these years represents the actual worst case multiple dry year yield for the City local supplies. For imported water, MWD identified 1990 to 1993 as the driest multiple years since 1922 when the least amount of imported water was available.

MWD has extensive programs and plans to increase supply reliability which are addressed in its 2010 RUWMP. MWD determined during the preparation of its 2010 RUWMP that the region can provide reliable water supplies under both the single driest year and the multiple dry year hydrologies, with a surplus of supply for all dry year scenarios through 2035.

Table 30 summarizes historical City supply availability for the base water years. Groundwater availability was based on entitlements that the City has to supply from the three groundwater basins of 19,775 afy. Local surface water from San Antonio Creek watershed is purchased through the City's stock ownership in SAWCo. Availability during average and dry years was based on the purchase amounts for those years. This reflects the City's utilization as much local surface water as possible because it cannot easily be stored.

Imported water availability for the average year was based on the City's entitlement in 2006 which was derived from the previous 10-year rolling average (1996 to 2005). This was because the City did not choose to purchase its full entitlement in 2006. Dry year purchases were based on the actual amount purchased since they more closely reflected City entitlements for those years.

Table 30 (DWR Table 28)

Supply Reliability — Historical Conditions[1]

Supply Availability[1]	Average/ Normal Water Year (2006)	Single Dry Water Year (2002)	Multiple Dry Water Years		
			Year 1 (2002)	Year 2 (2003)	Year 3 (2004)
Groundwater	17,668	17,668	17,668	17,668	17,668
Local Surface Water	2,914	187	187	1,347	368
Imported MWD Supply	5,103	8,163	8,163	7,572	7,326
Total	25,685	26,018	26,018	26,587	25,362
Percent of Normal Year [2]	100%	101%	101%	104%	99%

[1]Groundwater availability based on City entitlements. Local surface water availability based on purchases in base years. Imported water for average year based on previous 10-yr rolling average through 2005; dry yrs based on purchases in base years.
[2]Percent of the dry year supply compared with the average or normal year supply availability.

The historical multiple dry year scenario from Table 30 was applied to the next three years (2011 through 2013) and compared with average year supplies. This is presented in Table 31. Responses to an actual drought would follow the water use efficiency mandates of MWD, IEUA, and WFA's various shortage contingency plans, along with implementation of the appropriate stages of the City's Municipal Ordinance 1786 (Chapter 13.16 Water Conservation), discussed later in this section. The City's ordinance is provided in Appendix F. The City's water supply and demand conditions during each of the water year types for the next twenty-five years is discussed below.

Table 31				
Supply Reliability — Current Water Sources (afy)				
Water Supply Sources	Average / Normal Water Year Supply	Multiple Dry Water Year Supply		
		Year 2011	Year 2012	Year 2013
Groundwater	17,668	17,668	17,668	17,668
Purchased Surface Water	2,914	187	1,347	368
Imported MWD Supply	5,103	8,163	7,572	7,326
Total	25,685	26,018	26,587	25,362
Percent of Normal Year:	100%	101%	104%	99%

5.2.2 Normal Year

In Table 32, average water year availability is compared to projected water demands. The current water sources summarized in Table 31 will be available to the City in the future. These projections indicate that supplies will be available to meet City demands during a normal water year. As discussed in Section 2, the City has limited development potential per the General Plan, resulting in minimal increases to demands, offset by anticipated conservation savings. Even without the 20 percent reduction in demands associated with additional conservation savings and use of recycled water, demands can be met with existing supplies.

Table 32					
Supply and Demand Comparison — Normal Year (afy)					
	2015	2020	2025	2030	2035
Supply Totals (Table 16)[1]	26,630	27,030	27,030	27,030	27,030
Target Demand Totals (Table 14)	22,678	20,830	21,137	21,444	21,752
Difference	3,952	6,201	5,893	5,586	5,278
Difference as Percent of Supply	14.8%	23%	22%	21%	20%
Difference as Percent of Demand	17.4%	30%	28%	26%	24%

[1]Supply totals from Table 16 plus the new supply source of 900 acre-feet of recycled water for 2015 and 1,300 afy for 2020 through 2035.

5.2.3 Single Dry Year

Supplies and demands for the City were analyzed to determine impacts associated with a single dry year. The projected single dry year supply is based on the availability of water for each source under a single dry year, as presented in Table 30. Even though the demand projections reflect target reductions of 20 percent by 2020, an 11 percent increase in the combined Total Water Use from Table 14 was added to reflect the increase in demands the City experienced in 2007 compared with 2006. This increase may be attributed to it being the first year of drier weather, before additional conservation outreach is implemented. This is considered a conservative assumption as the City did not experience this same level of increase in 2000, also a dry year (only 3 percent).

Table 33 presents a comparison of projected single dry year water supply availability to the increased single dry year water demands projected for the next 25 years. This table indicates that the region can provide reliable water supplies under the single driest year hydrology.

Table 33

Supply and Demand Comparison — Single Dry Year (afy)

	2015	2020	2025	2030	2035
Supply Totals[1]	26,918	27,318	27,318	27,318	27,318
Target Demand Totals (with increase)[2]	24,513	22,515	22,847	23,180	23,512
Difference	2,404	4,802	4,470	4,138	3,806
Difference as % of Supply	8.9%	18%	16%	15%	14%
Difference as % of Demand	9.8%	21%	20%	18%	16%

[1]Supply totals from Table 30 for Single Dry Year plus recycled water.
[2]Single dry year demands were increased by 11 percent to reflect drier weather conditions causing an increase in demands.

5.2.4 Multiple Dry Years

The projected multiple dry year supply is based on the availability of water for multiple dry years as presented in Table 31, adjusted to include planned recycled water supplies. As was done with the single dry year demands, total projected target water use from Table 14 was increased 11 percent for the first dry year before additional conservation programs are implemented. Typically for the City, after the first dry year in which demands increase, demands then decline due to raised consumer awareness of a dry period occurring. The third dry year can then range from an increase or a decrease over the second year. This is a conservatively high demand estimate.

Table 34 presents the comparison of projected multiple dry year water supply availability over the next 25 years to the multiple dry year water demands which were increased for the first of the three years. This table indicates that the City can provide reliable water supplies under multiple dry year conditions.

Table 34						
Supply and Demand Comparison — Multiple Dry Year Events (afy)						
		2015	2020	2025	2030	2035
Multiple Dry Year First Year Supply	Supply Totals[1]	26,918	27,318	27,318	27,318	27,318
	Target Demand Totals[2]	24,513	22,515	22,847	23,180	23,512
	Difference	2,404	4,802	4,470	4,138	3,806
	Difference as % of Supply	8.9%	18%	16%	15%	14%
	Difference as % of Demand	9.8%	21%	20%	18%	16%
Multiple Dry Year Second Year Supply	Supply Totals[1]	27,487	27,887	27,887	27,887	27,887
	Target Demand Totals	22,678	20,830	21,137	21,444	21,752
	Difference	4,809	7,057	6,750	6,443	6,135
	Difference as % of Supply	17.5%	25%	24%	23%	22%
	Difference as % of Demand	21.2%	34%	32%	30%	28%
Multiple Dry Year Third Year Supply	Supply Totals[1]	26,262	26,662	26,662	26,662	26,662
	Target Demand Totals	22,678	20,830	21,137	21,444	21,752
	Difference	3,583	5,832	5,525	5,217	4,910
	Difference as % of Supply	13.6%	22%	21%	20%	18%
	Difference as % of Demand	15.8%	28%	26%	24%	23%

[1]Supply totals from Table 31 for Multiple Dry Years plus recycled water.
[2]Dry year demands were increased by 11 percent for the first dry year.

5.3 Water Shortage Contingency Planning

Actions that will be taken by the City in the event of a catastrophic reduction in water supplies are presented here. The most likely events may be a regional power outage and wildfires. Other catastrophic events include an earthquake in the Delta affecting imported water supplies; an earthquake in Southern California affecting the City service area, facilities, and local supplies; flooding, and other disasters.

On July 11, 2005 the City Council approved Ordinance 1786 establishing permanent conservation measures and a shortage contingency plan. The purpose of this ordinance was to provide for increasingly serious stages of water shortages and to define voluntary and mandatory water

conservation measures to be implemented during these stages. Key elements of the City's Ordinance include the following.

- Penalties
- Year Round Stage
- Moderate Shortage Stage
- High Shortage Stage
- Severe Shortage Stage
- Implementation

The City's three stage rationing plan is invoked during declared water shortages. The authority of the City Council, City Manager, and Water Utility Director is codified in Upland Municipal Code Section 13.16. Different specific restrictions are triggered at each stage. More information pertaining to specific prohibitions and reduction methods and exemptions for each of the stages can be found in the Upland Municipal Code Section 13.16 (Ordinance 1786), located in Appendix F.

5.3.1 Stages of Action

The City is vulnerable to potential disaster situations that could result in catastrophic interruption of water supplies. These situations include, but are not limited to drought, a regional power outage, earthquakes, interruption or reduction of imported supply, and water contamination. This can result in extreme shortage for water available for fire fighting and consumption. Since various actions will need to be taken to continue water service, especially for key functions such as fire fighting, the City has a staged response plan to invoke during declared water shortages. The stages are presented in Table 35.

Table 35

Water Shortage Contingency — Rationing Stages to Address Water Supply Shortages

Stage Number	Water Supply Conditions	Percent Shortage
Permanent	Year Round	0
Moderate Shortage Stage	Shortage or threat of supply shortage	To be determined when demands are anticipated to exceed available supply
High Shortage Stage	Shortage or threat of supply shortage	To be determined when above measures do not prevent the threat of demands exceeding available supply
Severe Shortage Stage	Shortage or threat of supply shortage	To be determined when above measures do not prevent the threat of demands exceeding available supply. Not based on % shortage due to City's varied supply portfolio but could result in savings of 50 percent to meet 50 percent shortage

A water supply shortage or threat of shortage exists when the City determines, in its sole discretion that it exists. The City Council may declare a Moderate, High, or Severe Shortage Stage at a regular or special public meeting. Such declaration shall be made by public announcement and shall be published in a newspaper and become effective immediately upon such publication.

5.3.2 Mandatory Prohibitions

Table 36 lists the mandatory prohibitions against specific water use practices. Restrictions related to waste of water are summarized elsewhere in this section. Information pertaining to specific prohibitions and reduction methods for each of the stages can be found in Appendix F. There are exemptions allowed for many of the actions listed in Table 36. For example, watering with a hand held hose or the use of a drip irrigation system is permitted on any days at any time.

Table 36

Water Shortage Contingency — Mandatory Prohibitions

Examples of Prohibitions	Stage When
Watering not allowed between 10:00 am and 6:00 pm	Year Round
Fix leaks, breaks, and malfunctions within 72 hours	Year Round
Wash vehicles with hand-held hose with positive shut-off nozzle or at commercial vehicle wash	Year Round
Drinking water must be requested at all eating and drinking establishments.	Year Round
Year Round restrictions	Moderate Shortage
Watering limited to even and odd days of the month depending on street address and not allowed between 10:00 am and 6:00 pm	Moderate Shortage
Wash vehicles only on designated watering day and not between noon and sundown	Moderate Shortage
No refilling residential pools except on designated watering days	Moderate Shortage
No filling or refilling ornamental lakes or ponds	Moderate Shortage
No irrigating golf course fairways except with reclaimed wastewater	Moderate Shortage
Moderate Shortage Stage restrictions	High Shortage
Watering limited to two days of the week depending on street address and not between 6:00 am and one hour before sundown.	High Shortage
Wash vehicles only on designated watering day and not between noon and sundown	High Shortage
No irrigating golf course tee areas and fairways except with reclaimed wastewater	High Shortage

5.3.3 Consumption Reduction Methods

Consumption reduction methods to be used to reduce water use in the most restrictive stage of Severe Shortage are listed in Table 37. Because outdoor watering constitutes over 60 percent of City residential demands, it is anticipated that total demands will be reduced by at least 50 percent under the Severe Shortage Stage watering restrictions alone in order to meet potential supply reductions of 50 percent.

Table 37		
Water Shortage Contingency — Consumption Reduction Method		
Reduction Method	**Stage When**	**Projected Reduction (% or afy)**
Year Round, Moderate, and High Shortage Stage restrictions	Severe Shortage Stage	Not quantified
Watering limited to one day per week depending on street address and not between 6:00 am and one hour before sundown.	Severe Shortage Stage	50 to 75 percent
Washing of vehicles is prohibited	Severe Shortage Stage	Not quantified
No refilling residential pools except on the designated watering day. New pool construction filling by permit only	Severe Shortage Stage	Not quantified
	Total	50 to 75 percent

5.3.4 Penalties and Charges for Excessive Use

Any violation of the water shortage program restrictions, including wasting of water and excessive use, is an infraction or misdemeanor. In addition to any other remedies that the City may have for enforcement, service of water would be discontinued or appropriately limited to any customer who willfully uses water in violation of any provision of the plan. The City may place a flow restricting device upon the water service, lock off a water meter, remove a water meter, and shut off the service line valve. Table 38 lists the penalties for violation of any prohibitions.

Table 38	
Water Shortage Contingency — Penalties and Charges	
Penalties or Charges	**Stage When Penalty Takes Effect**
Fine not to exceed $100	First violation
Fine not to exceed $200	Second violation
Fine not to exceed $1,000	Third violation
In addition to fines, discontinue service if willful violations of mandatory restrictions	Any violation of prohibitions

5.3.5 Imported Water Shortage Programs

IEUA, the Chino Basin Watermaster and MWD have developed the Chino Basin Dry Year Yield (DYY) Program to help alleviate demands on imported water during dry years by pumping additional groundwater. The DYY program is a part of a conjunctive use program to allow for the maximum use of imported water when available and the use of stored groundwater in Chino Basin during dry years. Imported water deliveries to participants increase during wet or normal years (or "put") and purchase of imported water would decrease during dry (or "take") years. Collectively, the eight DYY participants, six of which are local retail agencies of IEUA including the City, would meet predetermined amounts to achieve a 25,000 afy "put" and a 33,000 afy "take". Each of the local retail agencies volunteered to produce excess groundwater during a dry year in-lieu of normal imported water deliveries. In exchange,

they received funding for new groundwater treatment and well facilities that would allow excess groundwater production during dry years. Under the DYY program, the City agreed to pump up to 3,001 afy of additional local groundwater during dry years in lieu of using imported water from WFA. Because the future utilization of the DYY program is not certain, increases in groundwater production and decreases in imported supplies were not assumed for the previously presented reliability estimates.

As done in the recent past, the City also follows the Water Supply Allocation Plan (WSAP) guidelines of MWD once an extreme shortage is declared. This allocation plan is enforced by MWD using rate surcharges. IEUA follows the guidelines of the allocation plan and imposes the surcharge that MWD applies to its member agencies that exceed their water allocation. This results in higher costs to the City if its purchases exceed its allocation. Details of the plan can be found in Appendix A.4 of MWD's 2010 RUWMP.

The IEUA Drought Plan was developed for the purpose of implementing the WSAP within IEUA's service area in a manner that is fair and equitable to IEUA's member agencies. All WSAP definitions, policies, principals and program provisions are incorporated and considered to be a part of the IEUA Drought Plan. The Plan's principles encourage development and full utilization of local water resources, such as recycled water, and extraordinary conservation measures. The plan also addresses MWD's DYY program and the need for best management of the DYY program "shift" obligations in concurrence with WSAP reductions of imported water supplies to IEUA.

And finally, the City developed, in conjunction with WFA members, a Contingency Operating Plan identifying specific strategies/activities responding to different stages of drought.

5.3.6 Revenue and Expenditure Impacts

During a catastrophic interruption of water supplies or prolonged drought or water shortage of any kind the City will experience a short term, temporary reduction in revenue due to reduced water sales. Expenditures may increase as damage to the water system requires emergency repairs or if additional water must be purchased at a higher rate. Expenditures may also go down as less water is pumped through the system so power costs are lower, or water purchase expenses are lower during a catastrophic event as imported water available is restricted.

The City receives water revenue from a service charge and a commodity charge based on consumption. The service charge recovers costs associated with providing water to the serviced property, which does not vary with consumption. The commodity charge is based on water usage. Rates have been designed to recover the full cost of water service in the service and commodity charges. Therefore, the total cost of purchasing water would decrease as the usage or sale of water decreases. There are significant fixed costs associated with maintaining a minimal level of service. Should an extreme shortage be declared and a large reduction in water sales occur for an extended period of time, the City would monitor projected revenues and expenditures. However, at this time, due to the City's diverse water supply sources and the water commodity value, the City does not anticipate significant revenue impacts.

Albeit unlikely, to be required to do so, to overcome potential revenue losses and/or expenditure impacts, the City may lease available water supplies to local water agencies. It may also utilize reserves.

If necessary, the City will reduce expenditures by delaying implementation of its Capital Improvement Program and equipment purchases, and as a last resort adjust the work force, implement a drought surcharge, and/or reexamine its water rate structure.

5.3.7 Mechanisms to Determine Actual Reductions

The City will implement its water shortage program which imposes prohibitions, regulations of water use, and penalties for violations of water use during times of severe water shortages. Water production figures are recorded daily by City staff; weekly and monthly reports are prepared and monitored. These data are available to be used to measure actual water savings resulting from the effectiveness of any water shortage contingency stage that may be implemented.

As stages of water shortage are declared by MWD, the City will follow implementation of those stages and continue to monitor water demand levels. It is not until MWD's Shortage Stage 5 that MWD may call for extraordinary conservation. During this stage, MWD's Drought Program Officer will coordinate public information activities with IEUA and monitor the effectiveness of ongoing conservation programs. Monthly reporting on estimated conservation water savings will be provided to IEUA.

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Section 6 Demand Management Measures

UWMP Act: *10631(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*
(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
(A) Water survey programs for single-family residential and multifamily residential customers
(B) Residential plumbing retrofit
(C) System water audits, leak detection, and repair
(D) Metering with commodity rates for all new connections and retrofit of existing connections
(E) Large landscape conservation programs and incentives
(F) High-efficiency washing machine rebate programs
(G) Public information programs
(H) School education programs
(I) Conservation programs for commercial, industrial, and institutional accounts
(J) Wholesale agency programs
(K) Conservation pricing
(L) Water conservation coordinator
(M) Water waste prohibitions
(N) Residential ultra-low-flush toilet replacement programs
10631 (2) A schedule of implementation for all water demand management measures proposed or described in the plan.
(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.
(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.
10631 (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors. (2) Include a cost-benefit analysis, identifying total benefits and total costs. (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.
10631 (j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

6.1 Background

California faces unique water supply and demand challenges that are expected to continue indefinitely. The State has responded to those issues in a variety of ways including mandated legislation to assist water suppliers in their efforts to manage supply and demand. Over the last five years in particular, the entire State of California, and specifically the southern California region, reached a critical point in water supply reliability with the convergence of several key factors that included significant population increases, unseasonably low rainfall, critically dry conditions, and legally mandated environmental restrictions.

Upland has been proactive in developing water-use efficiency programs that conserve existing water resources to ensure adequate water supplies will be available for sustainable future growth. The City recognizes water use efficiency as an integral component of current and future water strategy that will benefit residents and as such strives to offer numerous incentives and educational opportunities for its citizens.

In 1991, the City became one of the first water agencies to sign CUWCC's *Memorandum of Understanding Regarding Urban Water Conservation*, accepting its obligation to implement a prescribed set of urban water conservation BMPs. The BMPs, which have been deemed equivalent to the Demand Management Measures set forth in the UWMP Act, form the cornerstone of the City's conservation programs and a key element in the overall regional water resource management strategy. The City has maintained its compliance with the BMPs, as demonstrated in its coverage reports. Appendix G contains the City's current BMP Activity Reports, which present a record of implementation activities.

In addition to the BMPs, Upland is required to comply with the requirements of the Water Conservation Act of 2009 to set and then to meet its urban water use reduction targets of 246 gpcd by 2015 and 218 gpcd by 2020. Section 3.1 of this UWMP describes how these targets were determined. As many of the City's conservation activities are implemented on a regional basis through IEUA's Regional Conservation Workgroup, the City will also actively participate in any attempt by IEUA to achieve regional compliance with the Water Conservation Act of 2009 through the regional alliance.

6.2 Best Management Practices

The MOU outlines 14 DMMs for urban water conservation, as presented in Table 39. The urban water conservation practices are intended to reduce long-term urban demands from what they would have been without implementation of these practices, and are in addition to programs that may be instituted during occasional water supply shortages.

In the following section, the City will describe its past and current conservation efforts and demonstrate how Upland plans to assist its customers in maintaining their current water-use efficiency practices as well as seek opportunities for more water conservation savings.

Table 39				
Implementation Responsibility and Regional Programs				
Item	**Efficiency Measure**	**Applies to:**		**IEUA Regional Program**
		Retailer	**IEUA as a Wholesaler**	
A	Water Survey Programs for Single Family and Multi-family Residential Customers	✓		✓
B	Residential Plumbing Fixture Retrofits	✓		
C	System Water Audits, Leak Detection and Repair	✓		✓
D	Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections	✓		✓
E	Large Landscape Conservation Programs and Incentives	✓		✓
F	High-Efficiency Washing Machine Rebates	✓		✓
G	Public Information Programs	✓	✓	✓
H	School Education Programs	✓	✓	✓
I	Commercial, Industrial, and Institutional Programs	✓		✓
J	Wholesale Agency Assistance Programs	✓	✓	✓
K	Conservation Pricing	✓	✓	✓
L	Water Conservation Coordinator	✓	✓	✓
M	Water Waste Prohibition	✓		✓
N	Residential ULFT Replacement Programs/Water-Sense Specification Toilets	✓		✓

Table 40 lists City activities and IEUA's regional water use efficiency DMM programs underway or scheduled for implementation within the next five years. The City has implemented all of the DMMs listed in Table 40 either directly by the City or as a part of IEUA's regional program.

The strategies and programs included in this UWMP are designed to meet compliance requirements of the following legislative and other directives.

- CUWCC BMPs
- AB 1420 – Implementation of Demand Management Measures
- SBx7-7 – The Water Conservation Act of 2009, which requires urban water suppliers to achieve a 20 percent per capita reduction in urban water use by 2020
- Any future conservation legislation and regulations

The Senate and Assembly bills are described in Section 1. Because of the importance of CUWCC reporting requirements, CUWCC is discussed in more detail below.

Table 40			
City of Upland Demand Management Measure Status			
Item	Demand Management Measure	DMM Status	
		Implemented or Scheduled for Implementation	Not Implemented or Scheduled for Implementation
A	Water Survey Programs for Single Family and Multi-family Residential Customers	✓	
B	Residential Plumbing Fixture Retrofits	✓	
C	System Water Audits, Leak Detection and Repair	✓	
D	Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections	✓	
E	Large Landscape Conservation Programs and Incentives	✓	
F	High-Efficiency Washing Machine Rebates	✓	
G	Public Information Programs	✓	
H	School Education Programs	✓	
I	Commercial, Industrial, and Institutional Programs	✓	
J	Wholesale Agency Assistance Programs	✓	
K	Conservation Pricing	✓	
L	Water Conservation Coordinator	✓	
M	Water Waste Prohibition	✓	
N	Residential ULFT Replacement Programs/Water-Sense Specification Toilets	✓	

6.3 CUWCC Requirements

CUWCC is a voluntary statewide organization of water agencies, public interest organizations, and private entities tasked with overseeing the BMP reporting process, implementing and revising the *Memorandum of Understanding Regarding Urban Water Conservation* (MOU), and generally promoting urban water use efficiency in California. Membership in CUWCC consists of three groups.

- Group 1: Urban Water Suppliers
- Group 2: Public Advocacy Organizations
- Group 3: Other Interested Parties

Only Groups 1 and 2 have voting rights to alter MOU provisions, and both groups must agree to any alterations. The MOU was last amended in June 2010. Upland became a Group 1 member of CUWCC in 1991, when it was one of nearly 100 water agencies and environmental groups to become charter signatories to the MOU. There are currently 389 CUWCC members.

As an MOU signatory, the City is obligated to make "good faith efforts" to meet coverage requirements for the BMPs for efficient urban water usage as set forth in the MOU. Every two years, water agencies

that are signatories to the MOU are required to fill out and submit online BMP reports on conservation program activities as they relate to individual BMPs. The latest reports for 2009 and 2010 were due on May 31, 2011.

A BMP is defined by the MOU as a policy, program, practice, rule, regulation or ordinance or the use of devices, equipment or facilities which meets either of the following criteria:

- An established and generally accepted practice among water suppliers that results in more efficient use or conservation of water; or,

- A practice for which sufficient data are available from existing water conservation projects to indicate that significant conservation or conservation-related benefits can be achieved; that the practice is technically and economically reasonable and not environmentally or socially unacceptable; and that the practice is not otherwise unreasonable for most water suppliers to carry out.

BMP reporting underwent a significant shift in June 2010. From 1991 to 2008, BMPS were divided into 14 requirements and signatories reported activity in all 14 categories. These 14 BMP's directly correspond to the UWMP's 14 DMM's. As such, the City's implementation of CUWCC BMPs automatically equates to implementation of the DMMs required by the Act.

This type of reporting ended with fiscal year 2008/09. Beginning in reporting fiscal year 2009/10, the requirements changed to allow more flexibility, including an option for meeting a target GPCD. Because the 2010 UWMP spans both types of reporting requirements, Tables 39 and 40 address the 14 BMPs/DMMs; information is provided here for revised reporting requirements that are currently a part of the MOU.

6.4 Regional Demand Management Efforts

The following is a general description of the City's demand management strategies to maintain compliance with the Water Conservation Act of 2009 and with the DMMs/BMPs under the GPCD compliance option. All programs and strategies will be continued to assist the City in meeting future demand reduction targets, although due to funding, not all programs are implemented simultaneously.

IEUA is forming a Regional Alliance in support of its eight retail member agencies that must comply with the Act. All member agencies within IEUA's service area have agreed to the formation of a Regional Alliance, and will continue to cooperatively participate in developing programs and meeting water conservation goals. The City is an active participant in IEUA's regional conservation program and supports IEUA's plan to form a Regional Alliance and exceed its regional water use reduction goal of 20 percent by 2020 through regional conservation programs and aggressive recycled water development, as described in IEUA's 2010 Regional UWMP.

A portion of the City's water conservation efforts are conducted through regional programs. The City, through IEUA, has access to MWD's extensive array of conservation programs. In addition, the City is a member of two major regional conservation groups: IEUA's Regional Conservation Workgroup, which facilitates and supplements MWD programs in the IEUA service area; and the Water Education – Water

Awareness Committee (WEWAC), which manages a number of regional water education and public information programs. Upland also has a strong working relationship with Chino Basin Water Conservation District (CBWCD), which also provides additional conservation and education programs for Upland residents. The City's involvement in cooperative MWD and IEUA water efficiency programs are described here.

6.4.1 MWD's Regional Conservation Programs

MWD currently provides financial support for local water projects and water conservation projects implemented by its member agencies that contribute to an increase in the reliable regional water supplies available to the region. The City, through its MWD member agency IEUA, currently receives financial contributions from MWD for the following conservation programs.

Save-A-Buck Commercial and Multi-Family Rebate Program – MWD provides rebates from $30 to $2,250 for water saving technologies for indoor and outdoor water use.

SoCal Water $mart Residential Rebate Program – MWD sponsors a region-wide program that offers single-family residents rebates for High Efficiency Clothes Washers (HECWs), weather-based irrigation controllers (WBICs), and rotating nozzles. The Program formerly provided rebates on High Efficiency Toilets (HETs—1.28 gallons per flush) and synthetic turf.

Enhanced Conservation Program – The Enhanced Conservation Program provides funding directly to MWD member agencies to encourage new and creative approaches to implement urban water conservation.

California Friendly Landscape Irrigation Efficiency Training – MWD offers classroom and online training to professional landscapers and the residential community.

Community Partnering Program – MWD provides co-sponsorships to support water-related and education community projects, programs, and events.

Innovative Conservation Program – The Innovative Conservation Program provides funding for research and development of new and creative ways to conserve water. The participants include public agencies, individuals, and organizations.

California Friendly® Model Homes for New Construction – MWD offers financial incentives to builders who incorporate California Friendly® features into new Southern California homes, which include appliances and irrigation devices.

Public Sector Program Phase I – MWD provided up-front funding to increase water use efficiency at public facilities through indoor/outdoor water audits, enhanced device incentives, and recycled water hook-ups. (Phase II is currently suspended.)

Water Savings Performance Program – MWD provides incentives for customized water process and irrigation system improvements for both large landscape water use efficiency and industrial process improvements.

Pilot Turf Removal Program – Currently suspended due to the State economic crisis, this program may in the future provide $1 per square foot of turf removed for residential and Commercial, Industrial and Institutional (CII) customers to assist them in reducing outdoor irrigation.

Since 2005, the MWD programs have achieved 27,378 afy in passive and active water conservation savings across the MWD region. Savings for City residents from MWD programs are achieved through the City's participation in the IEUA Regional Conservation Workgroup, as described below.

6.4.2 IEUA's Regional Conservation Workgroup

IEUA coordinates a comprehensive regional conservation program through its Regional Conservation Workgroup. The Workgroup, comprised of representatives from each of IEUA's eight member retail agencies, advises IEUA on the implementation of conservation and education programs funded primarily through a per acre-foot surcharge (currently $4/acre-foot) on imported water purchased by the member agencies from IEUA. The program also receives funds through retail meter revenues collected by IEUA. These funds are used to leverage additional funding from MWD, DWR, and USBR, resulting in an annual conservation budget which is consistently over $1 million.

The City actively works through the Regional Conservation Workgroup to advocate for conservation and education programs that will be of direct benefit to residents. Upland has determined that the value its customers receive from IEUA programs developed and implemented through the Workgroup process greatly outweighs the cost of the programs to the City through the per acre-foot imported water surcharge.

From FY 2005/06 through FY 2009/10, the IEUA region has achieved 2,629 afy in annual savings and 39,660 acre-feet in lifetime savings, and the City has achieved 31 afy in annual savings and 424 acre-feet in lifetime savings from IEUA's regional conservation programs over the same time period. The programs are described below with a more detailed description in the previous section under MWD's programs.

MWD's SoCal Water$mart Residential Rebate Program – The Workgroup often supplements MWD's rebate amounts with local funds to increase regional participation in the program.

MWD's Save-A-Buck Commercial and Multi-Family Rebate Program – The Workgroup often supplements MWD's rebate amounts with local funds to increase regional participation in the program.

MWD's Public Sector Program Phase I – Public agencies located within the IEUA service area received over $2.6 million in funding.

Restaurant Pre-Rinse Spray Valves Program – This program, implemented in 2006, installed approximately 2,500 spray valves throughout the region.

Multi-Family Toilet Installation Program – Beginning in 2006, IEUA and member agencies launched a DWR grant-funded toilet installation program to perform 22,500 retrofits of high volume toilets with ultra-low flush toilets (ULFTs—1.6 gpf) and HETs in older apartment and condominium complexes throughout the region.

Regional SmarTimer of Inland Empire Program – In 2006, IEUA and its member agencies launched a WBIC distribution program sponsored by MWD and through a grant from DWR. WBICs were distributed at three events held within the IEUA service area.

Water Wise Residential Landscape Rebate Program – Launched in 2007, this pilot program encouraged residents to remove high water consuming lawns and replace them with climate-appropriate landscaping and other permeable surfaces that allow for groundwater infiltration. Qualifying applicants were eligible to receive $2 per square foot of turf removed with a maximum award of $2,000. A total of $240,620 in rebates was distributed.

In addition, IEUA provides the following additional agency support, conservation, and education programs to the City and its customers through the Workgroup process.

BMP Support Grant – An annual grant of $2,000 to each member agency for a BMP-related program or project.

CUWCC Dues – Fifty percent of CUWCC dues for each member agency is paid through the regional program (the other 50 percent is paid by MWD).

Phase II Landscape Audit Program – Launched in 2006, this program evaluated landscape efficiency for 150 commercial sites and 50 large residential sites and was completed in 2007.

Pilot Turf Removal Program – Currently suspended due to the State economic crisis, this program may in the future provide $1 per square foot of turf removed. 31 Upland residents participated in this program.

Phase III Landscape Audit Program – Beginning in 2008, this landscape program was a three-year DWR grant-funded partnership between IEUA, its member agencies, and CBWCD to provide landscape efficiency evaluations for 250 commercial sites and 50 residential sites.

Garden-In-Every School® Program – Established in 2005 and continuing over the last five years, this Program provides an outdoor laboratory and classroom for students through creating a water efficient education program by installing water wise gardens in elementary schools throughout the service area.

National Theatre for Children (NTC) – Over the last eight years, IEUA and member agencies have provided a school education program (K-6th grade) that provides water conservation and environmental education to elementary school children.

EduGrant Program – Provision of $500 grants to local educators for water related classroom activities. Upland staff help organize the program and select grant recipients. Since 2005, City educators have received five EduGrants for a total of over $2000.00 in classroom activity funding.

Project WET Workshops – Free workshop to introduce local educators to theProject WET ("Water Education for Teachers") *Curriculum & Activity Guide*, a collection of field-tested, innovative, interdisciplinary, water-related lessons and activities aligned with the California Content Standards. The City sponsors up to four teachers per year for the workshop.

Inland Empire Landscape Alliance – The Inland Empire Landscape Alliance was established as a voluntary collaborative working group in which landscaping policies are reviewed and implementation regionally coordinated.

MWD Solar Cup – The Solar Cup is an educational competition in which high school teams comprised of approximately 800 students build and race solar-powered boats at Lake Skinner, in Temecula Valley, learning about conservation of natural resources, electrical and mechanical engineering and problem-solving.

Regional Water and Landscape Conservation Fair – Held annually in October, the Fair is a community awareness partnering event with CBWCD, IEUA, and its member agencies created to educate the public on the importance of using water efficiently.

6.5 BMP Activity Reports

Appendix G contains the City's current BMP Activity Reports. The City has made a good faith effort to implement each of the 14 BMPs; the BMP Activity Reports contain a record of implementation activities. Additionally, the City has made a good faith effort to implement all programs that will ensure compliance with foundational and programmatic BMPs.

As mentioned previously, the BMP's will be reported for fiscal year 2009/2010 in a new format listed below. The BMPs listed below are incorporated into the MOU.

BMP 1: Utility Operations

BMP 1.1: Conservation Coordinator
BMP 1.2: Water Waste Prevention
BMP 1.3: Wholesale Agency Assistance Programs
BMP 1.4: System Water Audits, Leak Detection and Repair
BMP 1.5: Metering with Commodity Rates For All New Connections and Retrofit of Existing Connections

BMP 2: Education Programs

BMP 2.1: Public Information Programs
BMP 2.2: School Education

BMP 3: Residential Programs

BMP 3.1: Residential Landscape Water Survey Program
BMP 3.2: Residential Leak Assistance Program
BMP 3.3: High Efficiency Clothes Washers
BMP 3.4: WaterSense Specification Toilets

BMP 4: Commercial, Institutional, Industrial

BMP 5: Landscape

BMPs 1 and 2 are considered "Foundational" because they are essential water conservation activities and are adopted for implementation by all signatories to the MOU as ongoing practices with no time limits. The remaining BMPs are considered "Programmatic" and provide minimal levels of activity in order to achieve coverage. Coverage requirements for the current BMPs are meant to achieve conservation-related activity and water savings goals over a ten year period ending in 2018. Compliance with the Programmatic BMPs can be accomplished in one of three ways:

1. Accomplishing the specific BMP measures;
2. Accomplish a set of alternative measures which achieves equal or greater water savings, referred to in the MOU as the Flex Track Menu; or
3. Accomplish a GPCD water savings goal.

The third option above is similar but not identical to the GPCD target required in the Water Conservation Act of 2009. A water agency may also achieve coverage for an individual BMP by doing one of the following:

- File for an exemption from the BMP based on "good faith" efforts, lack of cost effectiveness, inadequate funds, or lack of legal authority to implement the BMP; or,
- Provide evidence that the agency has implemented an "at least as effective as" conservation activity that would provide equal water savings to implementing the BMP.

Retail agencies are required to achieve coverage for all the BMPs except BMP 1.3. At this time, the City expects to meet all requirements without filing for an exemption or an "at least as effective as." At the time of publication of this Plan, the CUWCC database for submittal, nor the coverage reports, for the City's 2009 and 2010 BMP reports were available. DWR's Guidebook states:

> If the new CUWCC database is not completed or ready for use at the time a supplier is to release its plan for public review, the supplier can self-certify its full compliance with the MOU. For this

purpose, a supplier will self-certify full compliance by supplying all the data required for documenting BMP, Flex Track Menu, or gallons per capita per day (GPCD) consumptions implementation. The supplier will also include documentation that coverage level for each BMP or equivalent program has been met. This documentation is to be included as part of the plan when it is released for public review.

The City self-certifies that it has implemented or is scheduled to implement all sections of the Foundational BMP's through the reporting years 2009 and 2010, as documented by the data provided in Appendix G. Furthermore, the City has included BMP reports for 2007 and 2008, the last reporting period when coverage was provided. The City has chosen the GPCD compliance option for achieving all of the Programmatic BMPs' water savings goals. The method of determining GPCD compliance under the MOU differs slightly from that of the Water Conservation Act of 2009, but not enough to be consequential to the City's plans to maintain compliance under both requirements.

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Section 7 References

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